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1920

# Hughes'

## Common School Branches in a Nutshell



Published by  
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**Cedar Falls, Iowa**



**HUGHES'**  
**COMMON SCHOOL BRANCHES**  
**IN A NUTSHELL**

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**PREPARED FOR THE BENEFIT OF**  
**TEACHERS AND STUDENTS**

—BY—  
**JOSIAH HUGHES**

**FIFTH EDITION**

**PUBLISHED BY J. S. LATTA, Inc.**  
**Cedar Falls, Iowa**

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## ORTHOGRAPHY

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1. **Orthography** treats of letters, syllables, and words.

Remark—The word orthography is derived from the Greek *orthos*, right, and *graphein*, to write.

2. **A Letter** is a character used to represent one or more elementary sounds.

3. **An Alphabet** is a complete list of the letters of a language. A perfect alphabet would have one letter for each sound.

4. **The Name** of a letter is the appellation by which it is known.

5. **The Power** of a letter is the elementary sound which it represents.

6. **An Elementary Sound** is the simplest sound of a language; as, a in ale.

7. **The Elementary Sounds** of the English language are about forty-two in number, and they are divided into (1) Vocals (Tonics), which consist of pure tone; (2) Sub-vocals (Sub-tonics), which consist of tone united with breath; (3) Aspirates (Atonics), which consist of pure breath only.

8. **Letters** are divided into (1) Vowels, which represent Vocals; (2) Consonants, which represent Sub-Vocals and Aspirates.

9. **The Vowels** are a, e, i, o, u, w, and y.

10. **W** and **y** are consonants, when they begin words or syllables and are immediately followed by a vowel.

11. **The Vowel** sounds of w and y are the same as those of u and i.

12. **I** is a consonant, when it represents the sound of y in yet; as in alien.

13. **U** is a consonant, when it represents the sound of w consonant.

14. **A, e and o**, are always vowels.

15. **Consonants Classified:** (1) As to the nature of the sound represented, Sub-vocals and Aspirates; (2) As to the position of the organs, Mutes and Semi-vowels; (3) As to the organs, of speech that mainly operate to produce consonant sounds, Labials Linguals, Linguo-dentals, Linguo-nasal, Palato-nasal and Palatals.

16. **Mutes** are those consonants that can not be sounded without the aid of a vowel. They are b, d, k, p, q, t, and c and g hard.

17. **Semi-Vowels** are those consonants that may represent sounds without the aid of a vowel.

18. **Labials** are letters whose sounds are made mainly by the lips; as, b, v, w, m, p, f; etc.

19. **Linguals** are letters whose sounds are made mainly by the tongue; as, l, r.

20. **Linguo-dentals** are letters whose sounds are made mainly by the tongue and teeth; as, d, j, z, t, s, etc.

21. **Linguo-nasal** is a letter whose sound is articulated by the tongue, the sound passing through the nose; as, n in man.

22. **Palato-nasal** (ng in song) is made mainly by the palate, the sound passing through the nose.

23. **Palatals** are letters whose sounds are made mainly by the palate; as, g, y, k, h.

24. **Liquids** are letters whose sounds flow readily into other sounds. They are l, m, n, and r.

25. **Redundant Letters** are those which have no sounds of their own. They are c, j, q, and x.

26. **Cognate Letters** are those whose sounds are produced by the same organs of speech in a similar position; as, f and v, t and d, b and p.

27. **Sibilant Letters** are those which represent hissing sounds; as, s and z.

28. **Silent Letters (Aphthongs)** are those which represent no sounds, but are used: (1) To modify the sounds of other letters; as e in late, g in sign. (2) To indicate the proper pronunciation of syllables and words; as, e in peaceable. (3) To determine the signification; as, u in buy. (4) To show the origin; as P in Psyche (Greek).

Remark—F, j, q, r, x, v, and z, are never silent.

29. **Syllabication** is the proper division of words into syllables, and has a two-fold object: (1) To indicate the pronunciation of words; (2) To show the composition or derivations of words.

Remark—Syllables are: ultimate, the last; penultimate, the last but one; antepenultimate, the last but two; preantepenultimate, the last but three.

30. **A Spoken Syllable** is a sound or combination of sounds uttered with one impulse of the voice.

31. **A Written Syllable** is a letter or combination of letters representing a sound or sounds uttered with one impulse of the voice.

32. **A Word** is a syllable or a combination of syllables used as the sign of an idea.

33. **Words Classified:** (1) As to form, Simple and Compound; (2) As to origin, Primitive and Derivative; (3) As to the number of syllables, Monosyllable, Dissyllable, Trisyllable and Polysyllable.

34. **A Simple Word** is a single word, either primitive or derivative; as man, childish.

35. **A Compound Word** is one composed of two or more simple words; as ink-stand, son-in-law, penman, cloud-capped.

Remark—Compound words not frequently used generally retain the hyphen.

36. **A Primitive Word** is one not derived from any other in the same language: as, child, write.

37. **A Derivative Word** is one formed from a single simpler word by the addition of one or more letters, or syllables; as *childish*, *childishness*, *writing*.

38. **A Monosyllable** is a word of one syllable.

39. **A Dissyllable** is a word of two syllables.

40. **A Trisyllable** is a word of three syllables.

41. **A Polysyllable** is a word of more than three syllables.

42. **The Base of a Syllable** is the vocal or vowel used in its formation.

43. **The Base of a Compound Word** is the part modified; as, *stand* in *inkstand*.

44. **The Base of a Derivative Word** is the primitive word from which it is derived; as, *mind* in *remindful*, having both a prefix and a suffix.

45. **A Prefix** is a modifier placed before a primitive or radical word; as, *re* in *remind*.

46. **A Suffix** is a modifier placed after a primitive or radical word; as, *ful* in *fearful*.

47. **Affix** is a general term for prefixes and suffixes. The term may be applied to either or to both together.

48. **Accent** is a stress of voice laid on a particular syllable.

49. **Primary Accent** is more forcible than any other in the same word.

50. **Secondary Accent** is less forcible, and occurs nearest the beginning of a word.

51. **Discriminative Accent** is used to determine the part of speech and meaning; as, *conduct* (noun) and *conduct* (verb); *absent* (adjective) and *absent* (verb).

52. **A Diphthong** is the union of two vowels in one syllable; as *ai* in *vain* or *ow* in *cow*, *ea* in *meat*, *oa* in *boat*.

53. **A Proper Diphthong** is one in which both vowels are sounded.

Remark.—There are four proper diphthongs; *ou* in *foul*, *ow* in *now*, *oi* in *boil*, *oy* in *boy*. They represent two diphthongal sounds.

54. **An Improper Diphthong (Digraph)** is one in which but one vowel is sounded; as, *ea* in *meat*, *oa* in *boat*.

Remark.—There are twenty-five digraphs. The following are in common use: *ae*, *ai*, *au*, *aw*, *ay*, *ea*, *ei*, *eo*, *eu*, *ew*, *ey*, *ia*, *ie*, *oa*, *oe*, *ua*, *ue*, *ui*, and sometimes *ou* and *ow*, as in *famous* and *blow*.

55. **A Triphthong (Trigraph)** is the union of three vowels in one syllable; as, *iew* in *view*, *eau* in *beau*.

Remark 1.—There are no triphthongs in which the vowels are all sounded; therefore there are no proper triphthongs. In *buoy* and *queen*, *u* is a consonant.

Remark 2.—The eight triphthongs, or trigraphs, are: *aye*

in aye, awe in awe, eau in beau and beauty, eou in gorgeous, eye in eye, ieu in lieu, iew in view, and owe in owe.

56. **A Tetragraph** is the union of four vowels representing one sound; as, ueue in queue.

57. **The Consonant Combinations** are: ph, sh, th, wh, and ng.

58. **A Double Consonant** is a consonant immediately repeated in the same syllable; as, ff in ruff, ss in hissing.

Remark.—X, k, and v, are never doubled.

59. **A Substitute** represents a sound usually represented by some other letter or letters; as, e for long a in they.

60. **Phonology** (Phonetics) is the science of the elementary sounds uttered by the human voice in speech.

61. **Orthoepy** treats of the correct pronunciation of words. It includes syllabication, accent and articulation.

62. **Diacritical Marks** are characters used to indicate the sounds of letters.

63. **Lexicography** treats of the signification of words.

64. **Pronunciation** is the correct vocal expression of words or parts of words.

65. **Spelling** is the direct expression of the letters or sounds of a word, in their proper order.

66. **Orthographic Spelling** is the expression of the letters of a word in their proper order.

67. **Phonetic Spelling** is the expression of the elementary sounds of a word, in their proper order.

68. **Analysis** is the separation of a word into its elements.

69. **Synthesis** is the combination of elements into words.

70. **Phonotypy** treats of the representation of sounds by distinctive characters.

71. **Synonyms** are words of the same, or nearly the same, meaning; as character and reputation, discover and invent.

72. **Antonyms** are words of opposite meaning; as weak and strong, joy and sorrow, friendly and hostile.

73. **Homophones** are words of the same sound, but different in spelling and meaning; as bale and bail, loan and lone, see and sea.

74. **Homonyms** are words of the same sound and spelling but different in meaning; as, bear (noun) and bear (verb), black (verb) and black (adjective).

75. **Paronyms** are words of similar derivation; as, kind, kindly, kindness. Homonyms are sometimes called paronyms.

#### RULES OF SPELLING

Rule I. The final letter of a monosyllable ending in f, l, or s, preceded by a single vowel, is doubled; as, bell, mill, snuff.

Rule II. Monosyllables and words accented on the last syllable ending in a single consonant preceded by a single vowel double the final letter on receiving a suffix beginning with a

vowel; as, hot, hotter; thin, thinner; refer, referred; occur, occurring.

Rule III. Final e is usually dropped before a suffix beginning with a vowel; as, move, movable; love, lovable; sale, salable.

Rule IV. When a suffix is added to a word ending in y preceded by a consonant, the y is changed to i, unless the suffix begins with i; as, ready, readier; supply, supplied; tardy, tardier.

#### READING

1. **Reading** is imbibing the thoughts, feeling, and sentiments of an author.

2. **Audible Reading** is imbibing the thoughts, feelings, and sentiments of an author, and giving utterance to the language.

3. **Silent Reading** is imbibing the thoughts, feelings, and sentiments of an author, without giving utterance to the language.

4. **Elocution** is the art of expressing thought, emotion and passion in an easy, graceful and effective manner.

5. **Speaking** is the oral expression of thought and sentiment.

6. **Declamation** is the delivery of another's composition.

7. **Oration** is the delivery of one's own composition.

8. **Articulation** is the distinct utterance of the elementary sounds.

9. **Vocal Expression** is the utterance of thought, feeling, or passion. It embraces Emphasis, Inflection, Slur, Modulation, Monotone, Personation, and Pauses.

10. **Emphasis** is a stress of voice placed on one or more words of a sentence, its object being to give prominence and importance.

11. **Absolute (Ordinary) Emphasis** is that which is independent of any contrast or comparison.

12. **Antithetic (Relative) Emphasis** is that which is used in comparing or contrasting ideas; as, "It is better to mend our faults than to hide them."

13. **Inflection** is the slide of the voice used in reading and speaking. Its divisions are the Rising, the Falling, and the Circumflex.

14. **The Rising Inflection** is the upward slide of the voice.

15. **The Falling Inflection** is the downward slide of the voice.

16. **The Circumflex** is a union of the two inflections on the same syllable or word, beginning either with the falling and ending with the rising, or with the rising and ending with the falling. It is used to express irony, sarcasm, sneering, or contrast.

17. **The Rising Circumflex** begins with a falling and ends with a rising slide of the voice.

18. **The Falling Circumflex** begins with a rising and ends with a falling slide of the voice.

19. **Slur** is a smooth, rapid, subdued movement of the voice over the words, phrases and clauses of less importance. It is applied to passages expressing contrast, repetition, explanation, etc.

20. **Modulation** is the variations of the voice in reading and speaking. It includes Pitch, Force, Quality and Rate.

21. **Monotone** is an unvaried tone throughout a sentence or discourse.

22. **Cadence** is the natural dropping of the voice on the closing words of a sentence.

23. **Pauses** are cessations of the voice in reading and speaking.

24. **Grammatical Pauses** are those indicated by the punctuation marks.

25. **Rhetorical Pauses** are those used to give clearness and impressiveness to the parts between which they are used.

26. **Pitch** is the degree of elevation or depression of sound. Its divisions are High, Moderate, and Low.

27. **The Keynote** is the standard pitch of the voice in reading and speaking.

28. **The Compass** of the voice is its general range above and below the keynote.

29. **Quantity**, in reading and speaking, has reference to the loudness or volume of sound; also to the time occupied in uttering a syllable or word.

30. **Force** is the degree of energy with which sounds are uttered. Its divisions are Loud, Moderate, and Gentle.

31. **Stress** is the application of force to some particular part of a syllable or word. Its divisions are Radical, Vanishing, Median, Compound and Thorough.

32. **Quality of Voice** has reference to the nature, character, or kinds of tone used in speech. They are the Pure, Orotund, Tremulous, Aspirated, Plaintive, Guttural, and Falsetto.

33. **Rate (Movement)** is the degree of rapidity with which the voice moves in reading and speaking. Its divisions are Slow, Moderate, and Rapid.

34. **Gesture** has reference to the movements of the body and its members.

35. **Personation** is the representation of the tones and manners of other persons.

36. **Transition** is change in the manner of expression.

37. **A Series** is a number of particulars following each other in the same grammatical construction.

38. **A Commencing Series** is one which begins a sentence or clause; as, "Intelligence, industry, promptness and honesty are virtues that should be cultivated."

39. **A Concluding Series** is one which concludes a sentence

or clause; as, "The leading motives of men are honor, wealth duty, and safety."

40. **Climax** (klimax, a ladder) is a series of particulars so arranged and expressed as to secure a gradual increase of impressiveness; as, "Then Virtue became silent, heart-sick, pined away, and died."

41. **A Simile** is a direct comparison and is generally introduced by like, as, or so.

42. **A Metaphor** is a comparison implied in the word itself; as, "Life is an isthmus between two eternities."

43. **An Allegory** is a combination of kindred metaphors, forming a kind of parable or fable. Most of the parables of Scriptures, the Eightieth Psalm, the Pilgrim's Progress, are examples.

44. **Personification** attributes to inanimate objects some of the qualities of living beings.

45. **Antithesis** is the contrasting of objects, to heighten their effect; as, "A friend cannot be known in prosperity; an enemy cannot be hidden in adversity."

46. **Irony** asserts directly the opposite of the meaning intended to be conveyed. It ridicules under the pretence of praising.

47. **Apostrophe** is a turning away from the main discourse to address some person or object, whether present or absent, living or dead.

48. **Metonymy** is the use of the name of one object for that of another when the things denoted have some other relation than that of resemblance; as, "The drunkard loves his bottle;" "He read Milton."

49. **Ambiguity** is a double meaning involved in the construction of a sentence; as, "Samuel promised his father never to abandon his friends."

50. **Style** is that part of rhetoric which treats of the modes of expressing thought in language, whether oral or written.

51. **Diction** is that property of style which has reference to the selection and right use of words.

52. **Paraphrase** is a restatement of a text or passage, expressing the meaning in another form. Example: "One may smile and smile, and be a villain." The paraphrase is, "A man may affect the utmost candor and good nature even while plotting the deepest iniquity."

53. **A Verse**, or line of poetry, consists of a certain number of accented and unaccented syllables arranged according to some law.

54. **Prose** is the general name for all forms of discourse which are not written in verse.

55. **A Paragraph** is a connected series of sentences related and held together by a common thought.

56. **Poetry** is discourse written in metrical language.

57. **Rhyme** is the similarity of sound in the last syllables of two or more lines.

58. **Blank Verse** is verse without rhyme.

59. **A Stanza** is a regular division of a poem.

60. **Poetic Pauses** are pauses made in reading poetry, required by the measured character of verse.

61. **The Final Pause** is a pause made at the end of a line.

62. **The Caesural Pause** is a rhetorical pause in a line. Long lines may have two or more pauses.

63. **The Lyric Poem** is an expression of some intense feeling, passion or emotion. It is usually short, and is exemplified in the song, hymn and ode.

64. **An Elegy** is a poem of a sad and mournful kind, celebrating the virtues of the dead.

65. **The Epic Poem** is a poetical recital of some great and heroic enterprise. The epic is the longest of all poetic compositions.

66. **The Didactic Poem** seeks to teach some moral, philosophical, or literary truth.

67. **The Dramatic Poem** is a picture of human life adapted to representation on the stage.

68. **Tragedy** is an action in which the leading person, hero, or heroine, struggles against and finally succumbs to superior powers.

69. **Comedy** represents a conflict, but it does not end disastrously. It represents the ludicrous side of life. It often terminates happily.

#### AMERICAN WRITERS

##### THE COLONIAL PERIOD (1607-1765.)

Captain John Smith: "A True Account of Virginia."

John Winthrop: "Little Speech on Liberty."

John Cotton: "The New England Primer."

John Eliot: "The Bay Psalm Book."

Increase Mather: "Illustrious Providences."

Cotton Mather: "Essays to do Good."

Anne Bradstreet: "The Four Elements."

Michael Wigglesworth: "The Day of Doom."

Jonathan Edwards: "Freedom of the Will."

Benjamin Franklin: "Autobiography."

##### THE REVOLUTIONARY PERIOD

(1765-1800.)

John Adams: "Political Essays."

Thomas Jefferson: "Notes on Virginia."

Alexander Hamilton: "The Federalist."

Thomas Paine: "Common Sense."

Philip Freneau: "Eutaw Springs."

Samuel Woodworth: "The Old Oaken Bucket."

Francis Scott Key: "The Star Spangled Banner."  
Joseph Rodman Drake: "The American Flag."

### THE NATIONAL PERIOD (1800—?).

Charles Brockden Brown: "Arthur Mervyn."  
Washington Irving: "Knickerbocker History."  
James Fenimore Cooper: "The Last of the Mohicans."  
William Cullen Bryant: "Thanatopsis."  
Fritz Greene Halleck: "Marco Bozzaris."  
Ralph Waldo Emerson: "Representative Men."  
Nathaniel Hawthorne: "House of Seven Gables."  
Henry W. Longfellow: "Evangeline."  
John Greenleaf Whittier: "Snow Bound."  
Edgar Allan Poe: "The Raven."  
Oliver Wendell Holmes: "The Chambered Nautilus."  
James Russell Lowell: "The Vision of Sir Launfal."  
Francis Parkman: "Oregon Trail."  
Alice Cary: "Pictures of Memory."  
Josiah Gilbert Holland: "Bitter Sweet."  
Harriet Beecher Stowe: "Uncle Tom's Cabin."  
James Buchanan Read: "Sheridan's Ride."  
Walt Whitman: "Leaves of Grass."  
Lew Wallace: "Ben Hur."

### PENMANSHIP QUESTIONS AND ANSWERS

1. Define penmanship.
  - A. Penmanship is the science and art of writing. In the first grade it is usually taught as an imitative art only.
2. What three typical systems of writing are taught in the American schools?
  - A. The slant, the medial, and the vertical.
  3. Which is taught in most of our schools?
    - A. The medial slant, or that which is between the 52 degrees and the vertical.
  4. In what do the vertical and slant systems differ?
    - A. They differ in slant and in form. In the old slant system the loop letters are higher and the short letters are shorter than the vertical letters. Modern teachers of the slant system advocate short loop letters.
  5. Upon what is penmanship based?
    - A. Movement is the basis of all good writing.
  6. What is good writing.
    - A. That which is easily written and easily read.
  7. Mention five essentials to be cultivated.
    - A. Legibility, accuracy, speed, uniformity, and neatness.
  8. Why should pupils in the lower grades acquire a good handwriting?
    - A. Because the written work in the advance grades can

be done better when the pupils are able to write rapidly and neatly.

9. How is a good handwriting acquired?

A. By intelligent, patient and well directed practice.

10. Mention five essentials in learning to write.

A. Good materials, proper position, free movement, carefully graded copies, and studious practice.

11. Why is a proper position of prime importance?

A. Because it gives health, comfort, and muscular freedom. It should be mastered before writing itself is considered.

12. Which should be taught first, movement or form?

A. Modern teachers teach movement first, but the two may be taught together. Position, movement, and form is the usual order of instruction.

13. What does position include?

A. Position includes that of the feet, body, arms, hands, paper, and penholder.

14. Name four positions of the body in writing.

A. The front position, the right position, the right-oblique position, and the left position.

15. Which of the positions are used most?

A. Most of the modern authors recommend the front position. Some recommend the right-oblique.

16. What is the front position?

A. In the front position, the pupil faces the desk.

17. What is the right-oblique position?

A. In the right-oblique position, the body is turned a little to the left. In either position, the body should incline forward, but it must not touch the desk. The feet should be flat on the floor.

18. Describe the position of the arm and the paper in writing.

A. Supposing that the pupil occupies an individual seat, and uses the front position, the elbow should be near the corner of the desk, and extend just off the edge. The arm should rest upon the muscle in front of the elbow, and point toward the upper left corner of the desk, when starting to write on the left side of the paper. The ruled lines of the paper should point from the lower left to the upper right corner of the desk.

19. Describe the manner of holding the pen.

A. Hold the pen between the thumb and the first and second fingers, letting it cross the root of the nail of the second finger, and in front of the knuckle joint of the first finger, the thumb placed nearly opposite the first joint of the first finger. The third and fourth fingers should be brought back under the hand, and their nails should glide freely on the paper. The under part of the wrist must not touch the paper. The holder should point toward the right shoulder.

20. What is movement?

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A. Movement is the manner of propelling the pen in writing.

21. Name the kinds of movement.

A. Finger movement, fore-arm (muscular) movement, combined movement, and whole-arm movement.

22. What is the finger movement?

A. The finger movement is the combined action of the first and second fingers and the thumb.

23. What is the fore-arm, or muscular movement?

A. It is the action of the forearm upon the muscular rest near the elbow, the hand gliding on the nails of the third and fourth fingers.

24. What is the combined movement?

A. It is a union of the fore-arm with the finger movement.

25. What is the whole-arm movement?

A. It is a movement unfixed by any muscular rest.

26. How is freedom of movement secured?

A. Through many exercises, over and over, giving a part of each lesson period to drill or movement exercises.

27. What is the object in counting in giving drills?

A. Counting regulates speed, and establishes the habit of working the muscles in obedience to the will.

28. Why is large writing required in the primary grade?

A. The advocates of large writing for copies in the primary grades claim that it develops movement, and saves much time usually spent in drills on movement exercises.

29. What movement should be taught in the lower grades?

A. The teacher should aim to develop the muscular movement from the beginning. Habit in finger movement hinders progress in developing a muscular movement. However, some successful teachers of writing strive for accuracy of form, at first letting the child write slowly, and then gradually quickening the speed of writing.

30. Why should the children be taught to write on the blackboard?

A. The first writing done by the children should be on the blackboard. Large writing on the blackboard calls into action the muscles of the shoulder and whole-arm. The development of these muscles results in the development of the other muscles used in writing.

31. Should the beginner use a pen, or a pencil?

A. The pencils should be used in the primary grade.

32. Should the paper be ruled, or unruled?

A. Unruled paper should be used in the first and second grades. The pupils practice with more freedom of movement when they use unruled paper.

33. What time should be given for writing?

A. About twenty minutes for the primary grades. The

time for the lesson should be just before recess in the forenoon.

34. Give a systematic plan of developing a lesson in writing.

A. (1) Study the exercise to be practiced. (2) Become accustomed to the correct rate of speed. (3) Point out the prevailing faults and suggest remedies. (4) Practice and compare work with the copy.

35. How many spaces should be given between, (1) words; (2) sentences in the same paragraph?

A. (1) The distance between words should be two spaces; (2) three spaces should be left between sentences in the same paragraph.

36. What main slant was formerly adopted by most penmen?

A. About 52 degrees.

37. What is the base line?

A. The horizontal line on which the writing rests.

38. What is the head line?

A. The horizontal line to which the short letters extend.

39. What is the intermediate line?

A. It is the second line above the base line.

40. What is the top line?

A. The horizontal line to which the loop and capital letters extend.

41. What is a space in height?

A. The height of small i.

42. What is a space in width?

A. The distance between the straight lines in small u.

43. What is the height of small r and s? Of the figures.

A. One and one-fourth spaces. The figures are one space high. Some authors make the figure six one and one-fourth spaces high.

44. What three small letters extend to the intermediate line?

A. D, t, and p.

45. What two small letters extend one and one-half spaces below the base line?

A. P and q.

46. What is the height of the capital letters?

A. All the standard capital letters extend three spaces above the base line.

47. Are the authors uniform as to the height of the letters?

A. They differ as to the height of the loop letters. Some authors make them the same height above the base line as d, t, and p.

#### UNITED STATES HISTORY

850. Iceland discovered by the Northmen.

970. Greenland discovered by Gunbiorn, a Norwegian, who sailed from Iceland.

986. Eric the Red founded a colony on the southern coast of Greenland.

1001. Leif the Lucky, a son of Eric the Red, probably explored the coast of North America from Labrador to Rhode Island, and named the country Vineland.

1492. Columbus discovered America, at the island of Guanahani, one of the Bahamas.

1497. John Cabot discovered the coast of North America.

1498. South America discovered by Columbus.

1499. Amerigo Vespucci, an Italian, a native of Florence, visited America, drew a map of the country, and wrote letters giving an account of his discoveries. His letters were published by a German geographer, who named the country in honor of Vespucci.

1513. Ponce de Leon, a Spaniard, seeking for a fabled fountain of immortal youth, discovered Florida.

1513. Balboa, a Spaniard, discovered the Pacific Ocean.

1518. Grijalva, a Spaniard, explored the southern coast of Mexico.

1519-'21. Cortez, a Spaniard, conquered Mexico.

1520. Magellan, a Portuguese in Spanish service, discovered and sailed through the strait which bears his name, named the Pacific Ocean, and made the first circumnavigation of the globe.

1524. Verazzani, an Italian in the service of the French government, explored the eastern coast of North America.

1528. Narvaez, a Spaniard, explored part of Florida.

1534-'35. Cartier, a Frenchman, explored and named the gulf and river of St. Lawrence.

1541. DeSoto, a Spaniard, discovered the Mississippi river.

1565. Melendez, a Spaniard, founded St. Augustine, Florida; the first permanent settlement in the United States.

1576. Frobisher, an Englishman, attempted to find a northwest passage to Asia.

1579. Sir Francis Drake an Englishman, explored the Pacific Coast.

1582. Espejo, a Spaniard, explored New Mexico, and founded Sante Fe; the second oldest town in the United States.

1584. Raleigh, an Englishman, sent out an expedition to Roanoke Island.

1585. Lane's Colony, Releigh's first attempt to form a settlement.

1587. White's Colony, Raleigh's second attempt.

1602. Gosnold, an Englishman, explored the coast of Massachusetts and discovered and named Cape Cod.

1607. Jamestown settled; the first permanent English settlement in the United States.

1608. Champlain, a Frenchman, founded Quebec, and (1609) discovered Lake Champlain.

1609. Henry Hudson, an Englishman in the service of the Dutch, discovered the Hudson river.

1614. Settlement of New York by the Dutch.

1619. First Legislative Assembly in America, at Jamestown, Virginia.

1620. Slavery first introduced by a sale of twenty Africans, made by the Dutch to the Georgetown, Virginia, planters.

1620. Pilgrim Fathers, or Puritans, settled at New Plymouth, Mass.; the first permanent English settlement in New England.

1630. Boston founded by John Winthrop.

1634. Maryland settled by the second Lord Baltimore.

1636. Rhode Island settled by Roger Williams.

1637. Pequot War; John Mason led the colonial army. The tribe perished in a day.

1643. Union of the New England Colonies—Massachusetts Bay, Plymouth, Connecticut and New Haven.

1651. Navigation act passed, enforced in 1660, giving England entire control of all the trade of the colonies.

1664. New York taken by the English, and the present name given.

1673. New York regained by the Dutch, but lost again the next year.

1675. King Philip, son of Massasoit, made war on the New England settlers; King Philip, after losing most of his warriors by death, and his family by capture, fled to his home, where he was shot by a faithless Indian.

1676. Bacon's Rebellion. Cause: Governor Berkeley refused Bacon a commission to make war on hostile Indians, and Bacon went against them without any commission except his sword. Governor Berkeley declared him a rebel, and afterward refused him a commission, although the Indians were committing depredations every day. A rebellion followed. Bacon died of fever, and his death ended the rebellion.

1682. William Penn, an English Quaker, founded the colony of Pennsylvania as an asylum for the persecuted English Quakers.

1689-1697. King William's War, a war between England and France, which extended to their American colonies. Closed by the Treaty of Ryswick.

1692. Salem Witchcraft, a delusion which prevailed at Salem, Massachusetts. Twenty persons were hanged and many others were tortured into confession, and thus saved themselves from punishment.

1702-1713. Queen Anne's War, caused in Europe by an attempt made by England to prevent the union of Spain and France. In Europe it was called the War of the Spanish Succession. Closed by the Treaty of Utrecht.

1733. Georgia settled by James Oglethorpe, an English-

man, whose object was to found an asylum for the persecuted Protestants of Europe, and for the poor who were imprisoned for debt, and for others imprisoned for crime.

1744-1748. King George's War, caused in Europe by disputes over the succession to the Austrian throne, in which France and England espoused opposite causes. The war extended to the French and English colonies in America. In Europe it was known as the War of the Austrian Succession. Closed by the Treaty of Aix-la-Chapelle.

1754-1763. French and Indian War, caused by the conflicting claims of England and France.

1755. Braddock's Defeat near Fort Du Quesne, now Pittsburgh.

1756. War formally declared by the French.

1759. Capture of Quebec; Wolfe and Montcalm the commanders, killed.

1763. Treaty of Paris; France ceded to England all her North American possessions east of the Mississippi, except the island and city of New Orleans.

1765. The Stamp Act passed by Parliament.

1765. The First Colonial Congress met in New York.

1774. The First Continental Congress met in Philadelphia.

1775-1781. Revolutionary War, a war between England and her American colonies, caused mainly by an attempt made by England to tax the colonies without allowing them representation in the British Parliament.

1775. Battle of Lexington, the first battle of the war.

1776. Declaration of Independence, July 4; proposed by Richard Henry Lee; prepared by Thomas Jefferson, John Adams, Benjamin Franklin, Roger Sherman, and Robert R. Livingston; written by Thomas Jefferson.

1777. Burgoyne surrendered his whole army to Gates, at Saratoga,—the turning event of the war.

1778. The treaty of alliance with France, by which France acknowledged the American independence, and agreed to send a fleet of sixteen vessels and an army of 4,000 men to assist in the war.

1779. John Paul Jones, a Scotch-American, noted for his wonderful pluck and skill in war, captured the Serapis and the Countess.

1780. Arnold's Treason. He sought and obtained command of West Point, a very important fortress. He bargained with General Clinton to deliver up the fortress for a general's commission in the British army and ten thousand pounds sterling. Major Andre, Clinton's messenger, was captured, and Arnold fled to a British vessel. Andre was hanged as a spy October 2d.

1781. War ended by the surrender of Cornwallis to Washington, at Yorktown, October 19.

1782. John Adams, Benjamin Franklin, Henry Laurens, and John Jay were appointed commissioners to conclude a treaty with Great Britain. November 30, a preliminary treaty was signed at Paris.

1783. The final treaty of peace, the Treaty of Paris, signed, September 3, and the United States gained their independence.

1787. The Constitutional Convention met at Philadelphia to revise the Articles of Confederation, but finding them too weak and defective for revision, formed an entirely new constitution, which was adopted the same year, and submitted to the several States for their ratification.

1788. The Constitution ratified by all the States except Rhode Island and North Carolina.

1789. The first Congress under the new constitution met at New York; George Washington inaugurated; Hamilton, Jefferson, Knox, Randolph, and Jay, appointed members of the cabinet.

#### WASHINGTON, 1789-1797

- 1791. Vermont admitted into the Union.
- 1792. Kentucky admitted into the Union.
- 1793. The cotton-gin invented by Eli Whitney.
- 1794. The Whiskey Insurrection in Western Pennsylvania.
- 1796. Tennessee admitted into the Union.

#### ADAMS, 1797-1801

- 1797. Trouble with France.
- 1798. Alien and Sedition laws passed.
- 1799. Death of Washington at Mt. Vernon.
- 1800. Capital removed to Washington.

#### JEFFERSON, 1801-1809

- 1803. Ohio admitted into the Union.
- 1803. Louisiana purchased from France for \$15,000,000.
- 1804. Lewis and Clark expedition.
- 1807. First steamboat on the Hudson, invented by Robert Fulton.
- 1807. Embargo law passed.
- 1807. Chesapeake and Leopard.

#### MADISON, 1809-1817

- 1811. General Harrison defeated the Indians at Tippecanoe.
- 1812. War declared against Great Britain, because of her violation of American commercial rights.
- 1812. Louisiana admitted into the Union.
- 1813. Perry's victory on Lake Erie.
- 1814. Treaty of Peace at Ghent, December 24.
- 1815. Battle of New Orleans, January 8.
- 1816. National Bank established by Congress.
- 1816. Indiana admitted into the Union.

## MONROE, 1817-1825

- 1817. Mississippi admitted into the Union.
- 1818. Illinois admitted into the Union.
- 1819. Alabama admitted into the Union.
- 1819. Florida purchased from Spain for \$5,000,000.
- 1820. Missouri Compromise passed; Maine admitted.
- 1821. Missouri admitted into the Union.
- 1824. General Lafayette visited the United States.

## JOHN QUINCY ADAMS, 1825-1829

- 1825. Erie Canal opened.
- 1826. John Adams and Thomas Jefferson died, July 4.
- 1828. The first passenger railroad in the United States begun.
- 1828. Revision of the Tariff, the "American System."

## JACKSON, 1829-1837

- 1831. James Monroe died, July 4.
- 1832. Nullification ordinance passed by South Carolina.
- 1832. Black Hawk War began.
- 1833. National Funds removed from the U. S. Bank.
- 1835. Seminole War begun by Osceola.
- 1836. Arkansas admitted into the Union.
- 1837. Michigan admitted into the Union.

## VAN BUREN, 1837-1841

- 1837. Great Financial Panic.
- 1838. Anti-Slavery agitation.
- 1840. Sub-Treasury Bill passed.

## W. H. HARRISON, 1841

- 1841. Harrison died one month after inauguration.

## TYLER, 1841-1845

- 1842. The Webster-Ashburton Treaty settled the dispute between the United States and Great Britain over the boundary line of Maine.
- 1842. Dorr's Rebellion in Rhode Island.
- 1843. The first magnetic telegraph erected in the world was put up between Washington and Baltimore.
- 1844. First public message sent was concerning Polk's nomination for the Presidency.
- 1845. Florida and Texas admitted into the Union.

## POLK, 1845-1849

- 1846. Mexico declared war against the United States, caused by the annexation of Texas, which was claimed by Mexico.
- 1846. Iowa admitted into the Union.
- 1847. The City of Mexico surrendered.
- 1848. Treaty of Guadalupe Hidalgo, by which the United

States gained the territory now comprised in New Mexico, Utah, and California; and the Rio Grande for the western boundary of the disputed territory. Mexico received \$18,250,000 as purchase money.

1848. Gold discovered in California.

1848. Wisconsin admitted into the Union.

#### TAYLOR, 1849-1850

1850. Death of John C. Calhoun.

1850. Death of President Taylor one year and four months after his inauguration.

#### FILLMORE, 1850-1853

1850. Clay's "Omnibus Bill" passed.

1852. Henry Clay and Daniel Webster died.

1852. "Uncle Tom's Cabin" written by Harriet Beecher Stowe.

#### PIERCE, 1853-1857

1853. The Gadsden Treaty—27,000 square miles of territory acquired from Mexico for \$10,000,000, and the Mexican line established.

1854. Kansas-Nebraska Bill passed; a bill which organized the two territories, and gave the inhabitants of each the right to decide whether their territory should be admitted into the Union as free or slave. This bill abrogated the Missouri Compromise, which provided that after 1820 slavery should be abolished in all other territory west of the Mississippi and north of the southern boundary of Missouri.

1857. The Kansas War, caused by a rivalry between the pro-slavery and anti-slavery parties.

#### BUCHANAN, 1857-1861

1857. The Dred Scott Decision.

1858. Minnesota admitted into the Union.

1859. John Brown seized upon the United States Arsenal at Harper's Ferry, and proclaimed freedom to slaves in that section. He was captured and hanged as a traitor.

1860. Oregon admitted into the Union.

1860. South Carolina seceded from the Union.

1861. Kansas admitted into the Union.

1861. Southern Confederacy organized at Montgomery, Alabama, with Jefferson Davis as President, and Alexander H. Stephens as Vice-President. South Carolina, Mississippi, Florida, Alabama, Georgia, Louisiana, Texas, Arkansas, Virginia, Tennessee, and North Carolina formed the Confederacy.

#### LINCOLN, 1861-1865

1861. War with the Confederate States declared. Cause: The slavery agitation and the secession of the Southern States

were the principal causes. Battle of Bull Run or Manassas Junction.

1862. Capture of Fort Donelson; battles of Shiloh, Seven Pines, Seven Days, second of Manassas, Antietam, Perryville, and Fredericksburg.

1863. Emancipation Proclamation; battles of Chancellorsville, Gettysburg, Chickamauga, Missionary Ridge, and the surrender of Vicksburg. West Virginia admitted into the Union.

1864. Grant made Lieutenant-General; Battle of the Wilderness; Battle between the Kearsarge and the Alabama; Battle of Winchester; Nevada admitted into the Union; Sherman's March to the Sea; Lincoln re-elected.

1865. Petersburg and Richmond captured; General Lee surrendered his army to General Grant at Appomattox Court House, April 9; President Lincoln assassinated at Ford's Theater in Washington, by John Wilkes Booth, April 14.

#### JOHNSON, 1865-1869

1865. General Johnston surrendered to General Sherman. April 26.

1866. Atlantic cable successfully laid between Ireland and Newfoundland, by Cyrus W. Field.

1867. Nebraska admitted into the Union; Alaska purchased from Russia for \$7,200,000; Tenure-of-Office Bill passed; President Johnson impeached.

#### GRANT, 1869-1877

1869. Pacific Railroad opened.

1870. The Fifteenth Amendment became a part of the Constitution.

1871. Chicago fire—3,000 acres devastated.

1872. Alabama claims settled—England to pay the United States \$15,500,000.

1873. Modoc War; Financial panic.

1876. Centennial Exposition at Philadelphia; Colorado admitted into the Union; the Custer slaughter.

1877. Electoral Commission.

#### HAYES, 1877-1881

1877. Hayes Southern Policy—withdrawal of troops from the South; Railroad strikes; telephone invented by Graham Bell; Phonograph invented by Thomas Edison.

1878. Silver remonetized.

1879. Resumption of specie payment.

1880. Treaties with China.

#### GARFIELD, 1881

1881. July 2—President Garfield was assassinated in the Baltimore and Potomac Depot at Washington by Charles J. Guiteau, a disappointed office-seeker. The President died after ten weeks of great suffering.

## ARTHUR, 1881-1885

1881. Centennial at Yorktown, Va.
1883. Civil Service Bill passed; letter postage reduced to two cents.
1884. New Orleans exposition.
1885. Washington Monument dedicated.

## CLEVELAND, 1885-1889

1885. Death of Vice-President Hendricks.
1886. Presidential Succession Law passed; Earthquake at Charleston, S. C.
1887. Inter-State Commerce Act passed.

## HARRISON, 1889-1893

1889. Oklahoma opened for settlement.
1889. Johnstown Flood.
1889. Washington Centennial.
1889. Admission of North Dakota, South Dakota, Montana, and Washington.
1890. Admission of Idaho and Wyoming.
1892. Homestead Strike.

## CLEVELAND, 1893-1897

1893. World's Columbian Exposition at Chicago.
1893. Business depression.
1894. The Coxey army led to Washington.
1894. The Pullman strike in Chicago.
1894. The Wilson Tariff Bill passed.
1896. Admission of Utah.

## M'KINLEY, 1897-1901

1898. Destruction of the battleship Maine.
1898. War declared against Spain.
1898. Battle of Manila.
1898. Destruction of Cervera's fleet.
1898. Annexation of Hawaii.
1898. Peace made with Spain.
1899. Philippine War opened.
1901. Re-election of President McKinley.
1901. The Pan American Exposition at Buffalo.
1901. President McKinley assassinated at Buffalo by Leon F. Czolgosz.

## ROOSEVELT, 1901-1909

1902. Cuba given control of her own government.
1902. Department of Commerce and Labor added to the Cabinet.
1903. Panama becomes independent of Columbia.
1904. Treaty with Panama, by which the United States was given the right of way for the Panama Canal.

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- 1904. Purchase of the Panama Canal and property from the French stockholders for \$40,000,000.
- 1904. Louisiana Purchase Exposition at St. Louis.
- 1906. San Francisco earthquake.
- 1906. Indian Territory and Oklahoma admitted as one state.
- 1907. Jamestown Exposition, held at Norfolk, Virginia; admission of Oklahoma.

TAFT, 1909-1913

- 1909. Discovery of the North Pole by Commander Robert E. Peary.
- 1911. Discovery of the South Pole by Captain Roald Amundsen, a Norwegian.
- 1912. Admission of New Mexico and Arizona.
- 1913. Establishment of the Postal Savings System and the Parcels Post; the Sixteenth Amendment to the Constitution, empowering Congress to lay and collect an income tax.

WILSON 1913-1921

- 1913. Seventeenth Amendment to the Constitution, providing for the election of United States Senators by the people.
- 1914. Panama Canal opened to commerce; the Great World War began; trouble with Mexico; President Wilson issued proclamation of neutrality; President Wilson tendered good offices of the United States in interests of peace.
- 1915. American steamer Gulflight torpedoed by German submarine; Cunard Line steamship Lusitania sunk by German submarine, 1,152 lives lost, 102 being Americans; American protest against Germany's submarine policy; resignation of William J. Bryan, Secretary of State; Henry Ford, with a large party of peace advocates, sailed for Europe; wireless communication between Japan and United States established.

- 1916. Mexican bandits, led by Francisco Villa, attacked Columbus, New Mexico, and murdered American citizens; United States troops under command of General Pershing crossed the border into Mexico to punish Villa and his army.

- 1917. Germany announced her intention of ruthless use of submarine, outlining barred zones and prescribing conditions for American vessels; President Wilson announced the breaking of diplomatic relations with Germany, February 3; Congress declared war on Germany, April 6; President Wilson's proclamation, declaring war and defining the status of alien enemies, April 6; Selective Service Bill passed by Congress, April 28; first registration under the Selective Draft Act, June 5; General Pershing and his staff launched in Liverpool, June 8; United States Expeditionary Force reached France, July 3;

American troops in France fire their first shot in trench warfare, October 23; United States at war with Austria-Hungary, December 11.

1918. American troops took over sector northwest of Toul, January 19; American transport, *Tuscania*, torpedoed, with loss of 101 lives, February 6; Americans gained signal victory in salient north of Toul, March 1; beginning of American co-operation on major scale, June 3-6; Lieut. Quentin Roosevelt killed in aerial battle near Chateau Thierry, July 17; French and American counter offensive on Marne-Aisne front began July 18; Americans began vigorous offense in St. Mihiel sector on 40-mile front, September 13; President Wilson requested by Prince Maximilian, new German Chancellor, to ask Allies for armistice, October 6; President Wilson refers Germans to General Foch for armistice terms, October 14; Germany surrenders, November 11; President Wilson leaves New York for France, December 4.

1919. Theodore Roosevelt died at Oyster Bay, L. I., January 6; Peace Conference opened informally at Paris, January 12; Germans signed peace treaty, June 28; Andrew Carnegie died at Lenox, Mass., August 11; General Pershing reached New York from France, September 8; the United States senate rejected the Versailles treaty, November 19.

1920. The Eighteenth Amendment went into effect January 19; Rear-Admiral Robert E. Peary died, February 20; Railways pass back into control of their owners March 1.

#### BATTLES OF THE REVOLUTION.

DATE	BATTLES	AMERICAN COM.	BRITISH COM.
1775.	Lexington.....	Parker .....	Pitcairn
1775.	Bunker Hill.....	Prescott .....	Howe
1775.	Quebec.....	Arnold .....	Carleton
1776.	Fort Moultrie.....	Moultrie .....	Clinton
1776.	Long Island.....	Putnam .....	Howe
1776.	White Plains.....	Washington .....	Howe
1776.	Trenton.....	Washington .....	Rahl
1777.	Princeton.....	Washington .....	Mawhood
1777.	Bennington.....	Stark .....	Baum
1777.	Brandywine.....	Washington .....	Howe
1777.	Germantown.....	Washington .....	Howe
1777.	Saratoga (2).....	Gates .....	Burgoyne
1778.	Monmouth.....	Washington .....	Clinton

1778. Savannah.....	Robt. Howe .....	Campbell
1779. Stony Point.....	Wayne .....	Johnson
1779. Savannah.....	Lincoln .....	Prevost
1780. Charleston.....	Lincoln .....	Clinton
1780. Camden.....	Gates .....	Cornwallis
1780. King's Mt.....	Campbell .....	Ferguson
1781. Cowpens.....	Morgan .....	Tarleton
1781. Guilford C. H.....	Greene .....	Cornwallis
1781. Eutaw Springs.....	Greene .....	Stewart
1781. Yorktown.....	Washington .....	Cornwallis

## BATTLES OF THE WAR OF 1812.

DATE	BATTLES	AMERICAN COM.	BRITISH COM.
1812. Detroit.....	William Hull .....	Brock	
1812. Constitution-Guerriere.....	Isaac Hull .....	Dacres	
1812. Queenstown.....	Van Rensselaer .....	Brock	
1812. Wasp-Frolic.....	Jones .....	Whinyates	
1812. Constitution-Java .....	Bainbridge .....	Lambert	
1813. Hornet-Peacock.....	Lawrence .....	Peake	
1813. Chesapeake-Shannon .....	Lawrence .....	Broke	
1813. Lake Erie.....	Perry .....	Barclay	
1813. Thames.....	Harrison .....	Proctor	
1814. Chippewa.....	Brown .....	Rial	
1814. Lundy's Lane.....	Brown .....	Rial	
1814. Fort McHenry.....	Armistead .....	Cochrane	
1815. New Orleans.....	Jackson .....	Packenham	

## BATTLES OF THE MEXICAN WAR.

DATE	BATTLES	AMERICAN COM.	MEXICAN COM.
1846. Palo Alto.....	Taylor .....		Arista
1846. Resaca de la Palma.....	Taylor .....		La Vega
1846. Monterey.....	Taylor .....		Ampudia
1847. Buena Vista.....	Taylor .....		Santa Anna
1847. Cerro Gordo.....	Scott .....		Santa Anna
1847. Molino del Rey.....	Worth .....		Santa Anna
1847. Chapultepec.....	Worth .....		Santa Anna

## BATTLES OF THE CIVIL WAR.

DATE	BATTLES	UNION COM.	CONFEDERATE COM.
1861. Fort Sumpter.....	Anderson .....		Beauregard
1861. Bull Run (1).....	McDowell .....		Beauregard
1862. Fort Donelson.....	Grant .....		Buckner

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1862. Shiloh.....	Grant .....	A. S. Johnston
1862. Seven Pines.....	McClellan .....	J. E. Johnston
1862. Seven Days.....	McClellan .....	Lee
1862. Bull Run (2) .....	Pope .....	Lee
1862. Antietam.....	McClellan .....	Lee
1862. Fredericksburg.....	Burnside .....	Lee
1862. Murfreesboro.....	Rosecrans .....	Bragg
1863. Chancellorsville.....	Hooker .....	Lee
1863. Gettysburg.....	Meade .....	Lee
1863. Vicksburg.....	Grant .....	Pemberton
1863. Chickamauga.....	Rosecrans .....	Bragg
1863. Chattanooga.....	Grant .....	Bragg
1864. Wilderness.....	Grant .....	Lee

### A CHRONOLOGY OF THE WORLD WAR

1914

June

28. Archduke Francis Ferdinand, heir presumptive to the throne of Austria-Hungary, and his wife, the Duchess of Hohenberg, assassinated at Sarajevo, Bosnia, by alleged Pan-Serbian fanatics.

July

23. Austria-Hungary, having accused Serbia of fomenting conspiracies against the internal tranquility of the dual monarchy, sent her an ultimatum.

28. Austria-Hungary declared war against Serbia.

29. Belgrade bombarded by Austria-Hungary; Russian mobilization ordered.

August

1. Germany declared war against Russia; France ordered a general mobilization.

2. Hostilities on border between Germany and France; Germany demanded free passage through Belgium; Belgium refused.

3. Germany declared war against France; German troops entered Belgium.

4. England sent ultimatum to Germany; British army ordered mobilized; England declared war against Germany; German troops under General Von Kluck halted at Liege.

5. German attack on Leige repulsed.

6. Germans took the town of Liege, though not all the forts; Austria-Hungary declared war on Russia.

7. French troops entered Alsace; General Joffre in supreme command of French army.

8. British troops landed on French soil; Serbia declared war on Germany.

11. France declared war on Austria-Hungary.
12. England declared war against Austria.
14. Allied troops massing in Belgium.
18. The British had 120,000 men in France.
20. Brussels captured by the Germans.
23. Japan declared war on Germany; Namur fell into German hands.
24. Germans entered France near Lille; Allies beaten at Mons and Charleroi; the "Great Retreat" toward Paris by the British and French armies began.
25. Austria-Hungary declared war against Japan.
27. British marines occupy Ostend; Allies retreat to the Somme.
28. Allies continue retreat through northern France; British fleet gained naval victory off Heligoland.
31. The name of St. Petersburg changed to Petrograd by imperial decree.

#### September

2. Allies held the line of the Seine, the Marne, and the Meuse above Verdun.
3. Paris placed in a state of siege, and the government withdrawn to Bordeaux; troops of the allies assume the offensive, the Germans approaching the valley of the Marne; Lemberg, Galicia, occupied by Russians.
4. Rheims fell into German hands; Germans crossed the Marne; the "Great Retreat" ended.
6. The Battle of the Marne began.
7. The German army began retreat back across the Marne, followed by the Allied forces.
8. Allies accelerate German retreat capturing German prisoners and guns; Von Kluck, beaten by General Joffre, retired toward Soissons; Allies crossed the Marne.
11. Germans retreat all along their line.
12. German retreat continued; the Battle of the Aisne began.
19. British forces began operations in Southwest Africa.
29. German attempt to pierce Allies' center failed.

#### October

9. Antwerp fell into German hands, and Ostend became the seat of government.
14. The Allies' troops enter Ypres.
15. Ostend taken by Germans; the Belgian government removed to Havre, France.
27. Battle at Yser River.
29. Assassin of Prince Ferdinand sentenced to twenty years in prison, and four accessories to be hanged.
30. Russia declared war on Turkey.

#### November

5. Great Britain and France at war with Turkey.

6. Germans lighten pressure along the Yser, the Allies holding firm.

9. Russians bombarded Turkish ports on the Black Sea.

**December**

2. Austrians captured Belgrade.

14. Austrians evacuated Belgrade.

19. Allies bombarded Dardanelles forts.

21. Russians mass troops before Warsaw.

**1915**

**January**

9. Germans made fourth great effort to take Warsaw.

14-16—Battle of Soissons; Germans victorious.

19. Germans drove the French across the River Aisne; fighting near Soissons ceased.

**February**

4. Three assassins concerned in the murder of Archduke Ferdinand are executed.

19. British and French bombarded Turkish forts in the Dardanelles.

27. German West Africa invaded by South African Union forces.

**March**

1. Great Britain declared blockade of German coast.

10. British captured Neuve Chapelle in Flanders battle.

14. Dresden, a German raiding cruiser, is sunk in the Pacific, off the coast of Chile.

18. Final and unsuccessful Allied naval attack at the Dardanelles.

22. Russians took the Austrian fortress of Przemysl after a long siege.

23. Allied troops landed at Gallipoli, Dardanelles.

**April**

19. British captured Hill 60, important strategic position southeast of Ypres.

22. Second Battle of Ypres began; French driven out of trenches north of Ypres, but gain 700 yards near St. Mihiel; Poison gas first used by Germans in attack on Canadians at Ypres.

26. Allies land armies at the Dardanelles.

**May**

2. British South Africa troops, under General Botha, captured Otymbingue, German Southwest Africa.

7. Lusitania, Cunard liner, sunk by a German submarine.

22. Italy entered the war.

31. German Zeppelins bombarded suburbs of London.

**June**

3. Austro-German forces recaptured Przemysl.

22. Austro-German forces recaptured Lemberg.

**July**

9. German Southwest Africa surrendered to British forces under General Botha.
15. Hill 285, in Argonne, recaptured by the French.
31. Baden bombarded by French aircraft.

**August**

4. Germans assail Warsaw's outer forts.
5. Warsaw captured by the Germans, but most of the Russian army escaped.
21. Great battle on Gallipoli Peninsula; Italy declared war against Turkey.
25. Brest Litovsk, Russian fortress, captured by Austro-Germans.

**September**

2. Austrians occupy Grodno, a Russian fortress.
6. Czar Nicholas of Russia assumes command of Russian armies.
25. Great Allied offensive on western front opened.

**October**

11. Bulgarian troops entered Serbia.
14. Italians captured Pregasina, on the Trentino frontier; Bulgaria officially declared war on Serbia.
15. Great Britain declared war on Bulgaria.
16. France declared war on Bulgaria.
19. Italy declared war on Bulgaria; Russia at war with Bulgaria.

**November**

5. Nish, Serbian war capital, captured by Bulgarians.
16. Bulgarian forces captured Krusevo.
24. Serbian government transferred to Scutari, Albania.

**December**

9. Teutons clear Serbia of all enemies.
17. General Sir Douglas Haig succeeded Field-Marshal Sir John French as commander of British forces in France and Flanders.
23. Siege of Cracow raised; Russians retire.

1916

**January**

14. Austrians occupied Cettinje, capital of Montenegro.
23. Austrians took Scutari, Albania.

**February**

9. Germans captured quarter-mile of French trenches northeast of Neuville.
21. Germans began new attempt to capture Verdun; Germans take Haumont.
25. Germans captured Fort Douaumont, Verdun, after terrific losses.

**March**

9. Germany declared war on Portugal.
15. Austria-Hungary at war with Portugal.

16. French repulsed five attacks by Germans to capture Fort Vaux, Verdun.

**April**

1. Germans captured Fort Vaux.

9. Supreme German attack on Verdun.

20. Russian troops land at Marseilles for service on French fort.

24. Irish rebellion began in Dublin.

**May**

2. British coast raided by five zeppelins.

14. Italian positions penetrated by Austrians.

15. British gained possession of Vimy Ridge.

20. Germans repulsed on Dead Man's Hill.

23. French captured Fort Douaumont.

25. Fort Douaumont retaken by the Germans.

31. Jutland naval battle in the North Sea, the greatest naval battle of the war, with heavy losses on both sides.

**June**

5. The cruiser Hampshire torpedoed off Orkney Islands, Scotland, and General Kitchener, British Secretary of War, loses his life.

6. Germans capture Fort Vaux.

9. Arabia declared its independence of Turkey.

18. Italians defeated the Austro-Hungarians, on the Sette Communi plateau.

23. Last great battle for Verdun.

**July**

1. Offensive launched by the Allies in Picardy.

9. Deutschland, German submarine freight boat, came into the harbor at Baltimore, Md.

14. British penetrated German second line.

30. British and French advance between Delville Wood and the Somme.

**August**

2. Fleury recaptured by the French; Von Hindenburg assumed supreme command of the Teutonic forces in the East.

3. The Turks disastrously defeated at the Suez Canal.

17. Bulgarians began offensive on the Macedonian front.

27. Roumania declared war on Austria-Hungary.

28. Italy declared war on Germany; Germany at war with Roumania.

31. Bulgaria at war with Roumania; Turkey at war with Roumania.

**September**

2. Bulgarian forces invaded Roumania along the Dobruja frontier.

13. Italians defeat the Austrians on the Carso.

**October**

8. German submarine appeared off American coast and sank British passenger steamer Stephano.

24. French recaptured Fort Douaumont.

**November**

1. Deutschland arrived at New London, Conn., on second voyage to the American coast.

2. Germans evacuated Fort Vaux.

6. British liner Arabia torpedoed and sunk in the Mediterranean.

**December**

6. Austro-German forces captured Bucharest, capital of Roumania.

15. French complete recapture of ground taken by the German in Verdun battle.

**1917**

**January**

22. President Wilson addressed the United States Senate, giving his ideas of steps necessary for world peace.

31. Germany announced her intention of ruthless use of submarine in the war zone around the British Isles.

**February**

3. United States severed diplomatic relations with Germany.

17. British troops on the Ancre captured German positions.

28. Submarine campaign of the Germans during February resulted in the sinking of 134 vessels.

**March**

16. American steamship Vigilancia torpedoed and sunk.

17. American tanker Illinois sunk by a German submarine.

26. 31. British advance on Cambrai.

**April**

6. United States at war with Germany.

7. Cuba and Panama at war with Germany.

8. Austria-Hungary breaks with the United States.

9. British push the Germans back on the long front.

20. Turkey breaks with the United States.

**May**

9. Siberia breaks with Germany.

17. Honduras breaks with Germany.

**June**

13. Haiti breaks with Germany.

**July**

1. Russians take the offensive in Galicia.

16-23. Russians retreat on a front of 155 miles.

22. Siam declared war on Germany and Austria-Hungary.

**August**

7. Siberia declared war on Germany.

14. China declared war on Germany and Austria-Hungary.

**September**

3. German troops captured Riga.

16. Kerensky proclaimed Russia a republic.

20. Costa Rica breaks with Germany.
26. British capture important positions east of Ypres.

**October**

6. Peru and Uruguay break with Germany.
23. American troops in France in trench warfare.
24. Austro-German great offensive opened on Italian position.
26. Brazil declared war on Germany.
31. Italians forced to retreat to the Tagliamento.

**November**

5. Italians retire from the Tagliamento line on a 93-mile front in the Carnic Alps.
9. Italians forced back to the Piave.
24. Cambrai threatened by the British.

**December**

1. Allies' Supreme War Council convened in first session at Versailles.
8. Jerusalem surrendered to the British, under General Allenby.
15. Armistice signed between Germany and Russia.

**1918**

**January**

14. Former Premier Caillaux placed under arrest on high treason charge.
20. Monte di val Belle captured by Italians.

**February**

6. American transport Tuscania torpedoed and sunk off the coast of Ireland.
22. American troops in Chennin des Dames sector.

**March**

3. Peace treaty between Bolshevik government of Russia and the Central Powers signed.
9. Moscow became the Russian capital.
21. Germans begin great drive on 50-mile front from Arras to La Fere.
29. General Foch chosen Commander-in-Chief of all Allied forces.

**April**

5. Japanese forces landed at Vladivostok.
9. Germans began their second drive in Flanders.
15. Second German drive halted before Ypres.
21. Guatemala declared war on Germany.

**May**

7. Nicaragua declared war on Germany.
27. Third German drive began on Aisne-Marne front of 30 miles between Soissons and Rheims.
29. Germans occupy Soissons as the French retire.
31. Marne River crossed by Germans.

**June**

3.-6. Americans check advance of Germans at Chateau Thierry.

15.-24. Austrian drive on Italian front ended without success.

**July**

1. The Americans captured Vaux.

18. French and Americans began counter offensive on Marne-Aisne front.

23. French drive the Germans back ten miles between the Aisne and the Marne.

**August**

2. Soissons recaptured by the French.

3. Allies drove the Germans back from their base at Fismes and captured the entire Aisne-Vesle front.

8. Field-Marshal Haig began new Allied drive in Picardy.

**September**

11. Germans forced back to the Hindenburg line.

13. Americans began vigorous offense in St. Mihiel sector on 40-mile front.

14. Allies recaptured St. Mihiel.

28. Belgians attacked enemy from Ypres to North Sea.

29. Bulgaria surrendered to the Allies.

**October**

1. St. Quentin captured by the Allies.

2. Lens evacuated by the Germans.

5. Prince Maximilian, German Chancellor, requests President Wilson to ask Allies for armistice.

8. President Wilson asks whether German Chancellor speaks for the people or for the war lords.

11. Americans advance through Argonne forest.

12. Solf, German foreign secretary, states that the plea for armistice is made in name of German people.

14. President Wilson refers Germans to General Foch for armistice terms.

17. Ostend captured by the Allies.

25. Great Italian drive began.

31. Turkey surrenders.

**November**

1. Clery-le-Grand captured by Americans.

3. Americans advance on 50-mile front above Verdun; Germans continue retreat; Austria surrenders.

4. Americans attack Sedan.

5. Americans seized heights south of Sedan.

10. Mons captured by Canadians.

11. Germany surrenders; armistice takes effect at 11 A. M.

## CIVIL GOVERNMENT.

## TERMS DEFINED.

1. **Accessory**, one who, in some way, aids in the commission of a crime, though absent.
2. **Accomplice**, an associate in the commission of a crime.
3. **Administrator**, a man appointed to settle the estate of an intestate.
4. **Admiral**, a naval officer of the highest rank; the chief officer of a fleet.
5. **Alien**, a person that belongs to another country.
6. **Allegiance**, an obligation owed by a subject to his sovereign or government.
7. **Alliance**, a union of interests, as between states.
8. **Ambassador**, the highest rank of diplomatic agents.
9. **Amnesty**, a general pardon of offenses against a government.
10. **Anarchy**, the state of society in which there is an absence of government.
11. **Anarchist**, one whose aim is to overthrow civil government.
12. **Armistice**, a cessation of hostilities between two countries, by mutual consent.
13. **Arsenal**, a place where naval or military equipments are manufactured or stored.
14. **Arson**, the willful or malicious burning of dwelling house or other building.
15. **Assignment**, a transfer of property to an assignee for the benefit of creditors.
16. **Assignor**, one who makes an assignment.
17. **Assignee**, one to whom property is assigned.
18. **Auditor**, one who examines and verifies or adjusts accounts.
19. **Autonomy**, the power or right of self-government.
20. **Bail**, security for a prisoner's appearance in court.
21. **Balance of Trade**, the difference between the money value of exports and imports of a country.
22. **Belligerent**, a nation, party or person engaged in war or contest.
23. **Bill**, a draft or form of a proposed law.
24. **Bill of Attainder**, an act of a legislative body, inflicting the penalty of death upon a person accused of treason or felony, without a regular trial before a court.

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25. **Bill of Sale**, a written instrument formally conveying the ownership of personal property, but not giving immediate possession.
26. **Bimetallism**, the use of a double metallic standard, as gold and silver, for currency.
27. **Body Politic**, an entire body of people united under one government.
28. **Bolter**, one who refuses to support a nominee or a measure of his party.
29. **Boodle**, money given for votes or political influence.
30. **Borough**, an incorporated village or town; a municipal division of a large city.
31. **Bribery**, the act of influencing voters' or officials' acts by means of money or other reward.
32. **Cabal**, a number of persons united in some plot or intrigue.
33. **Cabinet**, an advisory council of the executive officers of a nation.
34. **Cadet**, a person training for military or naval service.
35. **Capias**, a writ ordering the arrest of a person, that he may be brought into court.
36. **Capital Offense**, a crime punishable by death.
37. **Caucus**, a party conference or preliminary meeting composed of the leaders, to decide on candidates for office, party measures, etc., to be supported by their followers.
38. **Cavalry**, a body of soldiers mounted on horseback.
39. **Charter**, a grant made by a sovereign power to a people, securing them the enjoyment of certain rights.
40. **Citizen**, any inhabitant of a state who is not an alien.
41. **Civics**, the science of civil government.
42. **Civil Government**, control exercised by a state over its citizens.
43. **Civil Cause**, an action brought to recover rights or to secure compensation for their infraction.
44. **Civil Law**, relating to the private rights of individuals in a community and to an action in a private suit, as distinguished from a criminal trial.
45. **Civil Service Commission**, a body of persons appointed by the President to carry out the provisions of the Civil Service Act.
46. **Civil Service Reform**, a reform that eliminates the "Spoils System" and bases appointment to certain inferior offices upon ability to pass the civil service examination.
47. **Civil Unit**, the district in which the people exercise the

minor powers of government, as the magisterial district, the township, etc.

48. **Clearing-House**, a place where banks settle their differences.

49. **Colony**, a body of people transplanted from their mother country to a remote province.

50. **Commissary**, an officer who provides food and clothing for an army.

51. **Commission Form of Government for Cities**, a plan that reduces the city government from many elective officers to a few who are held responsible for its management.

52. **Common Law**, the unwritten law, based on the im-memorial customs of the country.

53. **Communism**, a special kind of socialism, advocating the doctrine of community of property.

54. **Commutation**, the substitution of a milder punishment for one more severe.

55. **Comptroller**, an officer who examines and certifies accounts of public officers.

56. **Confederacy**, the person or parties united by a league.

57. **Congressman-at-Large**, representatives elected on the general State ticket.

58. **Conservatives**, those opposed to any radical change in government.

59. **Constitution**, the fundamental law of a country.

60. **Consul**, an officer commissioned to reside in a foreign country and protect the commercial interests of the appointing government.

61. **Corruption of Blood**, a disability to inherit or transmit property on conviction of treason.

62. **Court of Claims**, a court organized to settle disputed claims against the United States.

63. **Death Duty**, a tax or duty imposed on the transfer of property at the owner's death, by inheritance or will.

64. **Diplomatic Service**, the whole body of officers whose duty it is to represent our government in foreign countries.

65. **Domain**, the territory governed by a state or nation.

66. **Electoral College**, the whole body of electors chosen by the people to elect a President and Vice-President.

67. **Eminent Domain**, the right of a government to take private property for public use, by paying the owner a fair value for it.

68. **Excise**, sometimes called internal revenue, a tax levied upon articles manufactured and used within the country.

69. **Ex Post-Facto Law**, a law that makes an act criminal which was not criminal when committed; or a law that inflicts a greater punishment than the law imposed when the crime was committed.

70. **Extradition**, the delivery of a fugitive from justice by one government to another.

71. **Felony**, a crime punishable by death or by imprisonment in the state prison.

72. **Filibustering**, obstructing legislation by dilatory tactics, such as speaking, making motions, or refusing to vote, merely to consume time; also making unauthorized military invasion.

73. **Franchise**, a privilege or right granted by a sovereign power to individuals.

74. **Franking Privilege**, the privilege of sending and receiving mail matter free.

75. **Fraud**, deception by which the right or interest of another is injured.

76. **Free Trade**, trade or commerce free from tariff regulations.

77. **Graft**, to obtain or give position or money by unfair official conduct.

78. **Gerrymander**, to divide a state into districts so as to give one party an unfair advantage, a plan devised when Elbridge Gerry was governor of Massachusetts.

79. **Government**, the direction and control of human interests; the persons authorized to direct and control.

80. **Habeas Corpus**, a writ issued by a judge to produce a prisoner before a court or judge.

81. **High Seas**, that part of the ocean common to all nations.

82. **Impeachment**, a formal accusation or charge brought against a public officer and his arraignment before a proper tribunal.

83. **Income Tax**, a tax on a person's income, profits, etc., or on the excess over a certain amount.

84. **Indictment**, a formal charge or accusation found by a grand jury.

85. **Inheritance Tax**, a death duty, or a tax imposed on property received by inheritance or will.

86. **Initiative**, the power by which the people originate or propose laws or measures by their petition.

87. **Injunction**, a judicial order requiring a party to do or refrain from doing a certain act. It usually prohibits.

88. **Larceny**, a theft of goods or property.

89. **Letters of Marque and Reprisal**, commissions issued by the government to private parties, authorizing them to cross the frontiers of another nation, and to take persons and property of its subjects in retaliation for injuries received.

90. **Local Option**, the right of the people, by popular vote or by local legislation, to determine whether certain things shall be permitted or prohibited in their locality, as the sale of intoxicating drinks.

91. **Majority Vote**, more than half of all the votes cast.

92. **Mandamus**, a writ issued by a superior court, directed to

any person, corporation, or inferior court, requiring them to do some specific act.

93. **Minority Vote**, fewer than half of all the votes cast.

94. **Ordinance**, a resolution of a common council.

95. **Parcels-Post**, the collection, transmission and delivery by postoffice department of small packages and parcels up to a restricted weight.

96. **Pardon**, a full release from a punishment.

97. **Plank**, a principle or declaration of intention stated in the platform of a political party.

98. **Platform**, a statement of principles upon which a person or party stands.

99. **Plurality Vote**, the excess of votes cast for any one of three or more candidates over those cast for any one of the others.

100. **Pocket Veto**, the act of a chief magistrate in retaining a bill over a period within which the legislative session will end, thus making it fail to become a law.

101. **Preamble**, the introductory part of a constitution or statute.

102. **Progressives**, those who advocate change in policy of principles to meet the demands of changed conditions, and favor a more democratic government.

103. **Prohibitionists**, those who favor forbidding by law the sale of alcoholic liquors.

104. **Protest**, a declaration that acceptance or payment of a bill or promissory note has been refused.

105. **Protocol**, the rough draft or chief heads of some diplomatic document.

106. **Proxy**, a writing by which one person authorizes another to vote in his stead.

107. **Quorum**, such a number of the members of any board or body as is competent to transact business.

108. **Radicals**, those who advocate extreme or thorough measures in political reform.

109. **Recall**, the right of the people to remove an unworthy elected officer from office.

110. **Referendum**, the right of the voters, upon the petition of a fixed per cent, to ratify or reject a legislative act.

111. **Rerieve**, the temporary suspension of the execution of a criminal's sentence.

112. **Requisition**, a formal demand made by one government upon another for the surrender of a fugitive criminal.

113. **Royalty**, in the United States, a payment made by a manufacturer or publisher to an inventor or author as his share of the profits.

114. **Sinking Fund**, a fund set apart for the gradual extinction of a debt.

115. **Socialism**, a doctrine advocating more democratic gov-

ernment and the public ownership and operation of the principal instruments of wealth, as railroads, mines, mills and factories.

116. **Standpatter**, one who stands by the traditions, policy or principles of his party regardless of changed conditions.

117. **State**, a community of persons living within certain limits of territory, under a permanent organization, which aims to secure prevalence of justice by self-imposed laws; in the United States, one of the commonwealths composing the Union.

118. **Subpoena**, a writ commanding the attendance of a person in court as a witness, under a penalty for failure.

119. **Suffrage**, the right or act of voting in political affairs.

120. **Suffragette**, a woman who advocates woman's suffrage.

121. **Suffragist**, one who favors, possesses or exercises the political right of suffrage.

122. **Syndicate**, a combination of capitalists for the promotion of some enterprise.

123. **Tariff**, a list or table of goods with the duties or customs to be paid for the same.

124. **Territory**, an extent of land and waters belonging to, or under the jurisdiction or sovereignty of a government.

125. **Traitor**, one who violates his allegiance and betrays his country.

126. "Treason against the United States shall consist only in levying war against them, or in adhering to their enemies, giving them aid and comfort."

127. **Treaty**, a compact or contract between two or more nations.

128. **Tribute**, a fixed amount paid at certain intervals by one nation to another as an acknowledgment of submission, or as price of peace and protection by virtue of some treaty.

129. **Truce**, a temporary suspension of hostilities by agreement of the commanders of opposing forces.

130. **True Bill**, the words indorsed upon an indictment by a grand jury, when satisfied that the charge against the accused person is made out.

131. **Trust**, a combination of two or more corporations for the purposes of limiting production and advancing prices for their own benefit.

132. **Ultimatum**, the final propositions offered by either of the parties in a diplomatic negotiation.

133. **Veto**, a right or power vested in a chief executive to prevent a legislative act from becoming a law.

134. **Watered Stock**, an increase in capitalization without a corresponding increase in assets.

135. **Will**, the legal declaration of a person, setting forth how he wishes his property disposed of after his death.

136. **Woman Suffrage**, the right of women to vote and to share equally with men the privilege of citizenship.

## PHYSIOLOGY

1. **The Three Kingdoms of Nature** are the mineral, the vegetable, and the animal.

2. **Organic Bodies** are those having organs by which they grow, as plants and animals.

3. **The Ameba** is the simplest form of animal life, consisting of a tiny lump of jelly-like substance called protoplasm. It is a single-celled animal, lives in stagnant water, and eats, moves, and produces other amebas.

4. **A Cell** is a granular mass of protoplasm containing a nucleus. The body of man is made of tiny cells like an army of amebas. Every living thing is composed of cells.

5. **A Tissue** is a group of cells which do the same kind of work. The tissues are muscular, epithelial, nervous, connective, osseous and adipose.

6. **An Organ** is a collection of different tissues having a definite compact form and doing a special work.

7. **A System** is several organs similar in structure, working together for a definite purpose.

8. **Anatomy** treats of the structure of the body.

9. **Physiology** is the study of the function of the various parts of the body.

10. **Hygiene** treats of the preservation and improvement of health.

11. **Vertebrates** are animals with backbones. They are fishes, amphibians, reptiles, birds and mammals.

12. **The Skeleton** is the framework of the body. Its functions are (1) to support the body; (2) to protect important organs; (3) to provide a system of levers, by means of which the body can be moved.

13. **Materials in Bone** are of two kinds, animal matter and mineral matter. The first gives toughness, and the second gives stiffness and firmness to the bones.

14. **The Periosteum** is a thin, tough membrane which covers and nourishes the bones.

15. **Cartilage** is a soft substance forming a part of the joints, air passages, nose, ears, etc. The bones of very young animals are cartilage.

16. **Joints** are the places where the bones come together. The two great classes are (1) movable, which are of three principal kinds, ball-and-socket, hinge, and gliding; (2) immovable, as those of the cranium.

17. **Synovia** is the fluid secreted by the synovial membranes. It lubricates the joints.

18. **Ligaments** are tough bands of connective tissue around the movable joints. Their function is to hold the bones of the skeleton together.

19. **Muscle** is the lean meat or flesh of the body. The muscles number more than five hundred. Their functions are

to move the body, to help protect delicate organs, and to help the ligaments in holding the bones together. The two great classes are (1) the voluntary, which are under control of the will; (2) the involuntary, which are not under the control of the will.

20. **Tendons** are strong white cords which connect the muscles with the bones.

21. **Food** is anything which, taken inside of the body, supplies it with weight, heat, or energy. The three great classes are (1) the carbohydrates (starches and sugars), obtained chiefly from plants; (2) the fats and oils, obtained from fat meat, eggs, butter, milk, vegetable oils, etc.; (3) the proteids, as lean meats, eggs, milk, cheese, grains, peas and beans.

22. **Digestion** is the process by which food in the alimentary canal is so changed that it can be absorbed by the lymphatics and blood vessels.

23. **The Organs of Digestion** are the mouth, tongue, teeth, salivary glands, pharynx, esophagus, stomach, intestines, lacteals, thoracic duct, liver, and pancreas.

25. **The Teeth** are developed in two sets—temporary (twenty in number) and permanent (thirty-two in number). There are four kinds—incisors, cuspids, bicuspids, and molars. The parts of a tooth are a crown, a neck, and one or more roots. The three kinds of material in the structure are dentine, cement, and enamel.

25. **The Salivary Glands** are six in number—two sublingual (under the tongue), two sub-maxillary (under the lower jaw), two parotid (in front of the ears). The saliva softens the food, and through its ferment, called ptyalin, digests starch.

26. **The Pharynx**, or throat, is the cavity behind the mouth and the nose, leading to the esophagus.

27. **The Esophagus** is a muscular tube connecting the pharynx with the stomach.

28. **The Stomach** is a large pouch lying mostly on the left side of the abdomen. It is composed of a layer of muscle covered with peritoneum and lined with mucous membrane. It is a storehouse for food; and it secretes gastric juice, which contains two ferments, rennin and pepsin. The stomach has two openings, the cardiac orifice, near the heart, and the pyloric orifice, in the right end.

29. **The Intestine** is divided into (1) the small intestine, about twenty-five feet long, which consists of three parts, duodenum, jejunum, and ileum; (2) the large intestine, about five feet in length, which includes the cecum, colon, and rectum. The vermiform appendix is a tube extending from the cecum. In the walls of the small intestines are the glands which secrete the intestinal juice. The villi are found in the small intestine, but not in the large intestine. In each of these villi is a tube, called a lacteal. The lacteals take up fat from the intestine.

30. **The Liver** is the largest gland in the body. It lies under the lowest ribs upon the right side. Its principal function is to secrete bile.

31. **The Pancreas** is a gland about six inches long, situated behind the stomach. It secretes the pancreatic juice, which digests albumin, fat and sugar. The pancreas is the most important of all the digestive glands.

32. **Absorption** is the process of sucking up the liquids and digested foods by the blood vessels or lymphatics.

33. **The Lymphatics** are the tubes which convey the lymph back to the veins. The lymphatics of the small intestine are called lacteals.

34. **Lymph** is the blood plasma which has left the capillaries to nourish the cells of the body.

35. **The Blood** is the red fluid of the body. It is composed of a liquid called plasma, in which float a multitude of red corpuscles, and fewer white corpuscles. The red corpuscles carry oxygen to the cells of the body. The white corpuscles kill disease germs, or repair injuries to the body.

36. **The Circulation** is the regular flow of the blood through the different blood vessels of the body.

37. **The Spleen** is a soft organ in which red corpuscles are formed.

38. **The Organs of Circulation** are the heart, arteries, veins, and capillaries.

39. **The Heart** is a hollow muscular organ, situated between the lungs and the thorax. In the adult man it is about the size of the closed fist. It is divided by a muscular partition into two chambers, the right and the left heart. Each chamber is divided into two cavities, the auricle and the ventricle.

40. **The Arteries** are tough cylindrical tubes which convey the blood from the heart to different parts of the body.

41. **The Veins** are cylindrical tubes which carry the blood from the different parts of the body to the heart.

42. **The Capillaries** are minute blood vessels which connect the termination of the arteries with the commencement of the veins.

43. **The Course of the Circulation:** The dark, impure blood is forced from the right ventricle into the pulmonary artery, and thence to the capillaries of the lungs. After being purified in the lungs, it is conveyed through the pulmonary vein to the left auricle, then through the mitral valve into the left ventricle. This is called the pulmonary circulation.

By a contraction of the left ventricle the blood passes through the aortic semilunar valve into the aorta; and through its branches the blood is conveyed to all parts of the body, from which it returns through the capillaries and veins to the right auricle. This is called the systemic circulation.

44. **The Organs of Respiration** are (1) the air passages.

through which the air enters and leaves the lungs; (2) the lungs, in which the blood is exposed to the action of the air; and (3) certain muscles used in breathing.

45. **The Air Passages** include the nostril chambers, the pharynx (throat), the larynx, the trachea, the bronchia, and the air-cells.

46. **The Lungs** are two in number, and lie inside the thorax (chest), one on each side of the heart. They are elastic, spongy masses, full of tiny cavities called air-cells.

47. **The Diaphragm** is a thin, broad, circular partition, separating the abdomen from the chest.

48. **Respiration** is the breathing of air into (inspiration) and out of (expiration) the lungs.

49. **The Nervous System** is composed of the brain, the spinal cord, the ganglionic system, and the nerves.

50. **The Brain** is the great center of the nervous system, and it is the seat of the mind. It is a pulpy mass found in the cavity of the skull, and is made up of two parts,—the cerebrum, which occupies the upper and anterior parts of the cranium, and the cerebellum, the lower and smaller portion.

51. **The Spinal Cord** is the cylindrical, long mass of nerve-matter found in the spinal canal. It extends from the pons to the second lumbar vertebra.

52. **The Pons** is the bridge of nerve fibres connecting the cerebrum, the cerebellum, and the spinal cord.

53. **The Medulla Oblongata** is the upper enlarged part of the spinal cord. It is about one inch long, and lies within the skull.

54. **The Sympathetic System** (Ganglionic) consists of two nerves, one on each side, containing many ganglia. They extend the whole length of the spinal column.

55. **Nerves** are small white cords of nervous matter, used to conduct the nervous influence.

56. **The Special Senses** are the means by which the mind becomes acquainted with external objects. The organs of the special senses are the tongue, nose, ear, eye, and skin.

57. **The Tongue** is the organ of taste. It is composed of muscles, and is situated within the arch of the lower jaw.

58. **The Nose** is the organ of smell. It is composed of cartilage covered by muscle and skin. The nasal passages are separated from each other by a partition consisting of bone and cartilage. The olfactory nerves end in the mucous membrane lining the air passages of the nose.

59. **The Ear** is the special organ of hearing. It is composed of the external ear, the middle ear, and the internal ear.

60. **The External Ear** consists of a tube about one inch in length, which spreads out into a broad expansion seen on the exterior of the head.

61. **The Middle Ear**, or Tympanum, is an air chamber in the

temporal bone. It contains three small bones—the malleus (hammer), the incus, (anvil), and the stapes (stirrup).

62. **The Internal Ear** consists of chambers and canals, hollowed out in the temporal bone. Its three parts are the vestibule, the semi-circular canals, and the cochlea.

63. **The Eye**, the organ of sight, includes the eyeball, the adjusting machinery, and the protecting organs.

64. **The Eyeball** has three membranes or coats,—the sclerotic coat (the white of the eye); the choroid coat, next within; the retina, the innermost coat.

65. **The Cornea** is the front part of the sclerotic coat.

66. **The Iris** is a flat disk whose circumference is connected with the choroid coat. It surrounds the pupil, and gives the blue, gray, or black color to the eye.

### The Human Skeleton

The Head (22) .....	Skull (8) .....	Frontal
		2 Temporal
		2 Parietal
Face (14) .....		
Sphenoid		
Ethmoid		
Occipital		
	2 Superior Maxillary	
	2 Inferior Maxillary	
	2 Nasal	
	2 Malar	
	2 Lachrymal	
	2 Turbinated	
	2 Palate	
	Vomer	
Ears (3) .....	Hammer.	
	Anvil.	
	Stirrup.	
The Trunk (54) .....	Spinal Column (24).{	7 Cervical Vertebrae.
		12 Dorsal Vertebrae
		5 Lumbar Vertebrae
	Ribs (24)—14 True, 6 False, 4 Floating	
	The Sternum.	
	Hyoid Bone	
Upper Extremities (64)....	Pelvis (4) .....	2 Innominate
		Sacrum
		Coccyx
	Shoulder .....	Clavicle
		Scapula
	Arm .....	Humerus
		Radius
		Ulna
	Hand .....	8 Carpal
		5 Metacarpal
		14 Phalanges
Lower Extremities (60)....	Leg .....	Femur
		Patella
		Tibia
	Foot .....	Fibula
		7 Tarsal
		5 Metatarsal
		14 Phalanges

**Defined Briefly**

1. **Abscess**, a collection of dead creamy matter in the flesh of a living person.
2. **Adenoid**, a tissue resembling gland tissue, growing in soft, grape-like bodies in the upper part of the pharynx.
3. **Albumen**, the chief constituent of the white of an egg.
4. **Albumin**, a term applied to a class of substances, some form of which is the essential part of every living cell.
5. **Aorta**, the great artery that conducts the blood from the left ventricle of the heart.
6. **Amylopsin**, the ferment in the pancreatic juice for digesting starches.
7. **Anemia**, a state of the blood in which there are too few red blood cells and too little plasma.
8. **Anesthetic**, a drug that produces insensibility.
9. **Antidote**, a substance which counteracts the effects of poison.
10. **Antiseptic**, anything used to destroy disease germs.
11. **Antitoxin**, a substance that counteracts or neutralizes toxin, especially that of diphtheria.
12. **Apoplexy**, a sudden loss of sensation and voluntary motion, usually due to pressure upon the brain caused by a burst artery.
13. **Appendicitis**, inflammation of the vermiform appendix.
14. **Asphyxia**, suspended animation, or apparent death.
15. **Bacterium**, the simplest and smallest form of plant life.
16. **Biceps**, a muscle with two heads; the muscle that bends the elbow.
17. **Bicuspid**, a tooth with two points; also a valve of the heart.
18. **Bronchi**, the two branches of the trachea or windpipe.
19. **Bright's Disease**, a disease of the kidneys, so-called because Dr. Bright gave the first true description of kidney diseases.
20. **Caffeine**, the active principle of coffee.
21. **Casein**, the part of the albumin of the milk that forms the curd.
22. **Contagious disease**, a disease which can be transmitted through the air.
23. **Diastole**, the relaxation of the heart when the blood enters it.
24. **Dorsal**, pertaining to the back.
25. **Dropsy**, an abnormal collection of lymph due to disturbance in the circulation of the blood.
26. **Dyspepsia**, a disordered state of the digestive organs.
27. **Enamel**, the hard calcified tissue that covers the crown of the teeth.
28. **Epidemic**, a disease affecting a great number of people.
29. **Epiglottis**, the lid-like cover that fits over the larynx at time of swallowing.

30. **Epilepsy**, a disease of the brain attended by convulsions and unconsciousness.
31. **Extensor**, a muscle that serves to extend any part of the body.
32. **Fever**, elevation of the body temperature due to poisons of disease.
33. **Fibrin**, a substance contained in the blood, which coagulates into a fibrous mass.
34. **Flexor**, a muscle that bends the limbs.
35. **Germs**, the rudimentary form of a new plant or animal.
36. **Germicide**, a substance used for destroying the germs of disease.
37. **Haversian canals**, the minute tunnels in bone through which the arteries run.
38. **Hemoglobin**, the coloring matter in the red blood corpuscles.
39. **Hemorrhage**, the flow of blood from a blood tube.
40. **Hepatic**, pertaining to the liver.
41. **Hookworm**, a slender white worm that enters the body and grows in the intestines, causing disease.
42. **Hydrophobia (Rabies)**, a disease usually caused by the bite of a rabid animal.
43. **Incisor**, a term applied to the front teeth.
44. **Influenza (Grip)**, a disease caused by a very small bacillus that grows in the respiratory passages.
45. **Malaria**, a disease caused by a germ introduced into the body by a certain species of mosquito. Formerly it was thought that the cause was exhalations which arise from decaying vegetable matter.
46. **Myosin**, a protein contained in lean meat.
47. **Narcotic**, a drug that dulls body action.
48. **Nicotine**, the active principle in tobacco.
49. **Oxidation**, a union of some substance with oxygen.
50. **Pulse**, a wave of pressure which passes along the artery with each heart beat.
51. **Reflex actions**, actions that take place without the exercise of the will.
52. **Sterilizing**, heating some substances until all living organisms are destroyed.
53. **Systole**, the contraction of the heart forcing the blood into the arteries.
54. **Toxin**, a virulent poison formed within a living body. Toxins are produced by germs.
55. **Tetanus (Lockjaw)**, a disease caused by a bacillus which enters the body through wounds, especially wounds made by unclean instruments.
56. **Triceps**, the muscle that straightens the elbow.
57. **Tuberculosis**, a disease caused by a slender bacillus, which most frequently attacks the lungs.

## DEFINITIONS AND FACTS

1. **Geography** is a description of the Earth.
2. **Mathematical Geography** treats of the earth as a planet of the solar system, and how to represent the earth's surface on maps and globes.
3. **Political Geography** treats of the nations of the earth as to their governments and laws, their moral and social condition, their languages, their religious and national customs.
3. **Physical Geography** treats of the land, the water, the atmosphere, animal and vegetable life, and their relations to one another.
5. **The Shape of the Earth** is nearly that of a sphere; it is flattened at the poles, the polar diameter being about twenty-six miles less than the equatorial diameter. Among the proofs of the earth's sphericity are: (1) Navigators have sailed round it; (2) the curvature of the water surface; (3) the circular shape of the horizon; (4) it casts a circular shadow; (5) the fact that all other planets are globular.
6. **The Earth Has Two Motions.** It rotates on its axis once in twenty-four hours, producing day and night; it revolves around the sun once a year, producing the four seasons.
7. **The Orbit** of the earth is the path in which it moves around the sun.
8. **The Equator** is a great circle midway between the poles.
9. **The Tropic of Cancer** is a small circle  $23\frac{1}{2}$  degrees north of the Equator.
10. **The Tropic of Capricorn** is a small circle  $23\frac{1}{2}$  degrees south of the Equator.
11. **The Arctic Circle** is a small circle  $23\frac{1}{2}$  degrees from the North Pole.
12. **The Antarctic Circle** is a small circle  $23\frac{1}{2}$  degrees from the South Pole.
13. **The Meridian Circles** are great circles passing around the earth from north to south through the poles.
14. **Meridians** are semicircles of longitude, drawn from one pole to the other.
15. **Longitude** is the distance east or west of an established meridian. It is measured 180 degrees east and west of the prime meridian.
16. **Latitude** is distance measured north and south of the Equator.
17. **Zones** are belts of earth parallel to the Equator.
18. **The Ocean Movements** are waves, tides, and currents.
19. **Waves** are the rise and fall of the ocean waters, caused by the wind.
20. **Tidal Waves** are immense waves that sometimes roll in upon the shore when earthquakes occur near the ocean.
21. **Tides** are the periodical risings and fallings of the ocean, caused by the attractive forces of the moon and the sun,

and by the rotation of the Earth. The rising is **flood** tide, the falling, **ebb** tide. The tides differ from wind waves in their extent, in their regularity, and in their cause.

22. **Ocean Currents** are vast streams of water flowing through the ocean. They are caused by the unequal heating of the waters of the oceans, by the winds, and by the rotation of the earth. The heating of the equatorial waters increases their bulk and causes a current toward the poles, and these movements are balanced by cold under currents of water flowing from the polar regions toward the Equator.

23. **The Equatorial Current** is a steady flow of water westward from the equatorial regions.

24. **The Gulf Stream** is a branch of the Equatorial Current which enters the Gulf of Mexico through the Yucatan Channel. It flows out through the Strait of Florida, and takes a course nearly parallel to our Atlantic seaboard, until it reaches the latitude of Newfoundland, where it turns more directly eastward.

25. **The Effect of Ocean Currents.** The great office of the ocean currents in general is to modify climate. If they come from a warm region, they tend to raise the temperature; if from a colder region, to lower it.

26. **Climate** is the condition of a region with reference to heat and moisture. It is modified chiefly by latitude, altitude, distance from the sea, direction of the winds, direction of the ocean currents, and position and distance of high mountain ranges.

27. **Isotherms** are lines drawn on maps through places having the same average temperature.

28. **An Avalanche** is an immense mass of snow or ice that slides or rolls down the slope of a high mountain. Avalanches occur in the Alps with great frequency, owing to their abrupt slopes.

29. **A Glacier** is a great mass of snow and ice which moves with extreme slowness down the higher mountain valleys or slopes. Glaciers are formed by snow collected in ravines, and there partially changed to ice by the pressure of its own weight. The motion of glaciers varies in rapidity from a few inches to several hundred feet a year.

30. **An Iceberg** is a vast mass of floating ice, broken from the end of a glacier pushed out into the sea. Only about one-eighth of an iceberg is above water. It floats along with some ocean current, until it is melted.

31. **A Volcano** is a mountain which emits from openings, (craters), lavas, cinders, ashes, steam, and various gases. Volcanoes are probably caused by the outbreak of steam confined in rocks beneath the sea or near to it.

32. **An Earthquake** is a shaking or trembling of the crust of some part of the Earth. Earthquakes are probably caused

by the strain produced by the contraction of a cooling crust and the formation of gases beneath the surface; or by the sliding of vast masses of subterranean rock one upon another.

33. **A Geyser** is a hot spring whose water is thrown high into the air in intermittent jets. Geysers occur in volcanic regions.

34. **Winds** are movements of the atmosphere, caused by the unequal distribution of heat, and by the rotation of the earth. They are classified as constant, periodical, and variable.

35. **Trade Winds** are the constant, gentle northeasterly and southeasterly winds, occupying a belt of about twenty degrees of latitude on each side of the Equator.

36. **Monsoons** are winds that blow toward the land in summer and from the land in winter. They blow from the northeast in winter, and from the southeast in summer. The most famous monsoons are those of Southern Asia.

37. **The International Date Line** is the meridian of 180 degrees, at which ships sailing eastward drop a day, and sailing westward add a day. The line is crooked because it was made to mark the limit of colonization of the Spaniards from the west and of other nations from the east.

#### GEOGRAPHICAL FACTS

The surface of the Earth covers about 197,000,000 square miles.

The water area is about 144,000,000 square miles.

The land area is about 53,000,000 square miles.

The population of the world is about 1,500,000,000.

The Pacific is the deepest ocean.

The Amazon is the largest river.

The Mississippi is the longest river.

The Dead Sea is the lowest depression.

Lake Superior is the largest fresh-water lake.

Mount Everest is the loftiest peak.

Thibet is the highest plateau.

Aconcagua is the highest volcano.

Belgium is the most densely populated country.

Greenland is the largest island.

London is the largest city.

Eiffel Tower, in Paris, is the highest edifice, 989 feet.

The largest cave is the Mammoth Cave of Kentucky.

The Caspian Sea is the largest lake.

Nearly half of the world's length of railroad is in the United States.

#### THE PRINCIPAL MOUNTAINS

**North America**—Rocky, Sierra Nevada, and Appalachian.

**South America**—Andes, Brazilian Parime, and Acaray.

**Europe**—Alps, Cantabrian, Pyrenees, Cevenes, Balkan Kiolen, and Carpathian.

**Asia**—Himalayas, Kuenlun, Thian Shan, Hindoo Koosh and Altai.

**Africa**—Atlas, Kong, Snow, and Mountains of the Moon.

**Australia**—Australian Alps and Blue Mountains.

### The Longest Rivers

**North America**—Mississippi, Missouri, Yukon, St. Lawrence, Mackenzie, Nelson, Rio Grande, Arkansas, Columbia, and Colorado.

**South America**—Amazon, La Plata, Orinoco, San Francisco, Madeira and Magdalena.

**Europe**—Volga, Danube, Don, Dnieper, Ural, Rhine, and Dwina.

**Asia**—Yang-tse Kiang, Yenisei, Hoang-Ho, Obi, Lena, and Amoor.

**Africa**—Nile, Niger, Congo, Zambesi, Orange, and Senegal.

**Australia**—Murray, Darling, and Warburton.

### GRAMMAR Classes of Sentences

#### 1. As to Form:

1. Simple—Susan reads.
2. Compound—He came to study and to recite.
3. Complex—He came to study to learn.

#### 2. As to Use:

1. Declarative—The children play.
2. Interrogative—Do the children play?
3. Exclamatory—How the children play!
4. Imperative—Children, play.

### Classes of Phrases

#### 1. As to Form:

1. Simple—He came to study.
2. Compound—He came to study and to recite.
3. Complex—He came to study to learn.

#### 2. As to Basis:

1. Prepositional—John lives on the hill.
2. Infinitive—He came to learn.
3. Participle—Being unwell, he remained.
4. Gerundial—Playing ball is good sport.

#### 3. As to Use:

1. Adjective—He has apples to sell.
2. Adverbial—They came to work.
3. Substantive—To forgive is divine.

### Classes of Clauses

#### 1. As to Form:

1. Simple—That he studies is evident.
2. Compound—That he studies and that he improved is evident.
3. Complex—That he was wrong when he said it is evident.

2. **As to Use:**

1. Adjective—We need men who are honest.
2. Adverbial—He came when I called him.
3. Substantive—I know that he is honest.

**A Synopsis of the Parts of Speech**  
**THE NOUN**

1. **Classes:**

1. Common—Common to all of a class.
  1. Class—One of a class of objects.
  2. Abstract—Name of a property or quality.
  3. Collective—Singular in form, but denoting more than one.
  4. Verbal (gerund)—Like both a verb and a noun.
2. Proper—Name of a particular object.

2. **Properties:**

1. Gender—Based upon sex.
  1. Masculine—Denotes males.
  2. Feminine—Denotes females.
  3. Common—Denotes either males or females.
  4. Neuter—Denotes neither males nor females.
2. Person.
  1. First—Denotes the speaker.
  2. Second—Denotes the person addressed.
  3. Third—Denotes the person or object spoken of.
3. Number.
  1. Singular—Denotes but one.
  2. Plural—Denotes more than one.
4. Case.
  1. Nominative—Used as subject or predicate.
  2. Possessive—Denotes ownership, etc.
  3. Objective—Object of a verb or of a preposition.
  4. Nominative Absolute—Independent of any governing word.

**THE PRONOUN**1. **Classes:**

1. Personal—Form shows the person.
  1. Simple—I, thou, he, she, it, etc.
  2. Compound—Myself, thyself, etc.
2. Relative—Joins an adjective clause.
  1. Simple—Who, which, what, that, as.
  2. Compound—Whoever, whatever, etc.
3. Interrogative—One used in asking a question.

2. **Properties**—Same as that of antecedent—case excepted.

1. Gender.
2. Person.
3. Number.
4. Case.

## THE ADJECTIVE

1. **Classes:**

1. Descriptive—Adds quality.
  1. Common—An ordinary quality.
  2. Proper—Derived from a proper noun.
  3. Participial—Derived from a verb.
2. Definitive—Limits without expressing quality.
  1. Articles—The, a, an.
    1. Definite—The.
    2. Indefinite—A, an
  2. Pronominal—May stand for a noun.
    1. Demonstrative—Points out definitely.
    2. Distributive—Limits nouns taken separately.
    3. Indefinite—Limits in a general way.
  3. Numeral—Denotes number or order.
    1. Cardinal—Denotes the number.
    2. Ordinal—Indicates position in a series.
    3. Multiplicative—Indicates how many fold.

2. **Comparison:**

1. Ascending—Good, better, best.
2. Descending—Good, less good, least good.

## THE VERB

1. **Classes:**

1. As to Use:
  1. Copulative—Joins a predicate.
  2. Transitive—Requires an object.
  3. Intransitive—Does not require an object.
2. As to Form:
  1. Weak—Sometimes called **regular verbs**.
  2. Strong—Sometimes called **irregular verbs**.

2. **Sub-Classes:**

1. Defective—Wanting in some principal part.
2. Redundant—Have two forms in the past tense.
3. Auxiliary—Help in verb-phrases.
4. Verbals—Verb-forms that do not assert.
  1. Infinitives—Usually preceded by to.
  2. Participles—Modify a noun or pronoun.
  3. Gerunds—Like both verbs and nouns.

3. **Properties:**

1. Voice—A form of the transitive verb.
  1. Active—Represents subject as acting upon an object.
  2. Passive—Represents the subject as being acted upon.
2. Mode—Indicates manner of assertion.
  1. Indicative—Asserts a thing as a fact.
  2. Subjunctive—Expresses a wish, a supposition, a future uncertainty.

3. Potential—Asserts power, necessity, duty, liberty, etc.
4. Imperative—Expresses a command, an entreaty, etc.
3. Tense—Denotes the time of an action.
  1. Present absolute.
  2. Present relative.
  3. Past absolute.
  4. Past relative.
  5. Future absolute.
  6. Future relative.
4. Person—Agrees with the subject.
5. Number—Agrees with the subject.

### THE ADVERB

#### 1. Classes:

1. Of Time—Now, then, when, daily, never, after, recently, often, soon, etc.
2. Of Place—There, where, here, hither, whence, anywhere, below, etc.
3. Of Manner—How, rapidly, thus, lazily, happily, well, easily, etc.
4. Of Degree—Much, more, most, so, little, less, far, too, etc.
5. Of Cause—Why, wherefore, therefore, thence, hence, etc.

#### 2. Sub-Classes:

1. Subjunctive—When, where, while, as, after, since, till, before, etc.
2. Interrogative—When, how, where, etc.
3. Relative—When, where, wherein, etc.
4. Modal—Yes, no, not, truly, verily, etc.

#### 3. Comparison:

1. Ascending—Rapidly, more rapidly, most rapidly.
2. Descending—Rapidly, less rapidly, least rapidly.

### THE CONJUNCTION

#### 1. Classes:

1. Co-ordinate—Join elements of equal rank.
  1. Copulative—And, both . . . and, also, besides, likewise.
  2. Adversative—But, whereas, however, nevertheless.
  3. Alternative—Neither, nor, or, neither . . . nor.
2. Subordinate—Connect clauses of different rank.
  1. Time—After, before, ere, since.
  2. Cause—Because, since, for, as.
  3. Condition—If, unless, provided.
  4. Concession—Though, although.
  5. Purpose—That, in order that, lest.

6. Result—That, so that.
7. Degree—Than, as.

## 2. Other Sub-Classes:

1. Correlative—Used in pairs.
2. Phrase—Phrases used as conjunctions.
3. Introductory—One that introduces a sentence.

## GRAMMAR—QUESTIONS AND ANSWERS

1. What is natural language?  
A. Natural language is instinctive methods of communicating thought or feeling. It is used by the brute animals.
2. What is artificial language?  
A. Artificial language is that which must be learned before it can be used.
3. What is an idea?  
A. An idea is a mental picture; or a mental representation of an object.
4. What is an object?  
A. An object is anything toward which the mind may be directed.
5. What is meant by the unit of a language?  
A. The unit of a language is the portion of it that is necessary to express a thought.
6. What is the unit of language called?  
A. It is called a sentence.
7. What is a sentence?  
A. A sentence is the expression of a thought in words.
8. What is grammar?  
A. Grammar is the science of language. It is the study of the sentence.
9. What is English grammar?  
A. English grammar is the study that teaches how the best speakers and writers use the English language.
10. What is meant by parts of speech?  
A. Parts of speech means the classes of words according to their uses in the sentence.
11. Show why we have about nine parts of speech.  
A. Words have about nine different uses; some name objects; some describe or point out; some stand for nouns; some affirm; some connect and show relation; some merely connect; etc.
12. Give a sentence containing each of the nine parts of speech.  
A. "Oh, our hopes so fondly cherished in youth and early manhood are now blighted!"
13. Why is a simple sentence so called?  
A. Because it is but a single statement.
14. Why is a complex sentence so called?  
A. Because it contains a single independent clause and one or more dependent clauses.

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15. Why is a compound sentence so called?
  - A. Because it is composed of co-ordinate assertions.
16. What are the parts of a complex sentence called?
  - A. Principal and subordinate sentences; principal and subordinate propositions; principal and subordinate clauses; independent and dependent clauses; or principal and subordinate assertions.
17. What are the parts of a compound sentence called?
  - A. Most authors call them **members**. Some call them **clauses**; others call them the **leading** and **co-ordinate sentences**.
18. What parts of speech does a clause sentence always parallel in its use?
  - A. A noun, adjective, or adverb.
19. What is a restrictive clause?
  - A. A restrictive clause defines or restricts the meaning of the antecedent: "The man that set the fire has been found." In this sentence the application of the noun **man** is restricted to a particular person.
20. What relative pronoun should be used in restrictive clauses?
  - A. Modern authors claim that only the relative pronoun **that** should be used in restrictive clauses; however some grammarians claim that the use of **who** and **which** in some sentences is sanctioned by good authority.
21. What is a non-restrictive, or explanatory clause?
  - A. It is an adjective clause that explains the antecedent, or expresses an additional thought. It must be set off by commas.
22. What is the subject of a sentence?
  - A. The subject of a sentence is that of which something is asserted or declared.
23. What may the simple subject be?
  - A. A noun, a pronoun, a clause, or a phrase.
24. What is the predicate of a sentence?
  - A. The predicate of a sentence is that which is asserted or declared of the subject.
25. Of what may the predicate consist?
  - A. The predicate may consist of a verb alone, or a verb and an attribute.
26. What may the attribute be?
  - A. An adjective, a pronoun, or a substantive.
27. What is a complement?
  - A. A complement is what must be added to an incomplete verb to give meaning to the sentence.
28. What is an incomplete verb?
  - A. An incomplete verb is one that requires an additional word, or words, to complete the assertion, "John **went** to the city." "John **was** sick." In the first sentence the verb is complete; in the second sentence the verb is incomplete, and takes a complement—an adjective complement.
29. What is an attribute complement?

A. An attribute complement is one that completes the predicate by naming or describing the subject.

30. What is a predicate adjective.

A. An adjective that completes the predicate and explains the subject.

31. What is a predicate noun?

A. A noun that completes the predicate and explains the subject.

32. What are predicate nouns and predicate adjectives usually called?

A. Attribute complements.

33. What is an object complement?

A. An object complement is one that completes the predicate by naming that which receives the action expressed by the verb. It is the direct object of the verb.

34. What is an objective complement?

A. Verbs of making, calling, choosing, naming, etc., take two objects. The second object is often called an objective complement. Some authors call it a factitive complement, or a factitive object. It belongs to the object complement.

35. What is an indirect object?

A. An indirect object is a noun or pronoun that tells for whom or what the direct object is intended.

36. Name verbs that may take an indirect object.

A. Bring, buy, give, hand, lend, make, pay, refuse, sell teach, etc.

37. Give sentences containing double possessives.

A. This book of John's is a grammar. "This hat of hers is new." "I want that horse of ours."

38. Give the principal words used as adjective pronouns.

A. All, another, any, both, each, either, few, former, latter, many, more, most, much, neither, none, one, other, own, same, several, some, such, this, that, these, those.

39. Give three rules for the uses of **shall** and **will**.

A. (1) To express simple future time, use **shall** with the first person, **will** with the second and third. (2) To express volition (acts of the will, as threats, resolves, etc.), use **will** with the first person, **shall** with the second and third. (3) In an interrogative sentence use **shall** with the first person always. With the second person and the third, use **shall** when **shall** is expected in the answer, and **will** when **will** is expected in the answer.

40. What distinction is made between **should** and **would**?

A. In general, the uses of **should** and **would** are parallel to those of **shall** and **will**.

41. What is a cognate object?

A. A cognate object of a verb is an object like the verb in meaning; as, "The horse ran a race."

**PARALLEL USES OF  
INFINITIVES AND PARTICIPLES**

**1. Construction of a Noun:**

1. Subject of a Finite Verb:
  1. **To steal** is base.
  2. **Playing** checkers is a waste of time.
2. Attribute:
  1. To die is **to sleep**.
  2. Playing is **exercising**.
3. Apposition With a Word:
  1. The task, **to sweep** the floor, was imposed.
  2. His task, carrying coal, is finished.
4. Apposition With a Phrase:
  1. To die, **to cease**, is not so pleasant.
  2. To gain by mean acts, **cheating**, is contemptible.
5. Object of Finite Verb:
  1. I desire **to sleep**.
  2. They commenced **plowing**.
6. Object of a Preposition:
  1. He is **about to go**.
  2. He is an expert at **playing ball**.
7. Independent:
  1. **To lie to me!** Shame!
  2. **Boating! Racing!**

**2. Construction of an Adjective:**

1. Limiting a Noun:
  1. He has apples **to sell**.
  2. The man **standing** in the door is my brother.
2. Limiting a Pronoun:
  1. I saw him **buy** the property.
  2. I saw her **singing** at her work.

**3. Construction of an Adverb:**

1. Modifying a Verb:
  1. He came **to get** grapes.
  2. He came **running** into the house.
2. Modifying an Adjective:
  1. He is anxious **to depart**.
  2. (No corresponding construction.)
3. Modifying an Adverb:
  1. The tree is old enough **to be cut**.
  2. (No corresponding construction.)

**COMPOSITION**  
**Questions and Answers**

1. What is composition?
- A. Composition is any oral or written expression of thought.
2. Where should the first lessons in composition be taught?

A. The first lesson in composition should be given in the home. The child should be required to express himself in good English.

3. Where should the teaching of composition begin in our public schools?

A. In the first grade. Oral composition should always come before written. Every lesson should be a language lesson.

4. What is the value of oral reproduction?

A. Oral reproduction helps the child to give back in good English whatever is furnished to the mind.

5. With what other study should all language work be done for the first two years.

A. All language work for the first two years should be done mainly in connection with the reading.

6. Why should similes and metaphors be taught in the primary grades?

A. The use of easy similes and metaphors in the primary readers makes it necessary that the teacher explain the meaning of the "picture" words.

7. Upon what may the oral language teaching be based in the third grade?

A. Historical stories, biographies, and journeys.

8. Of what should the first steps in written work consist?

A. Copying from easy models; reproduction of one or more facts brought out in nature study lessons; writing answers to questions so arranged that the result will be a brief composition.

9. State two points to be observed in the teaching of composition in connection with other subjects.

A. (1) The teacher must not give too much written work.  
(2) Careful attention must be given to the mechanical features of all written work.

10. In what grade should the study of formal grammar begin?

A. The elements of grammar may be taught in the fifth, sixth and seventh grades in connection with the regular language work. Formal grammar should be studied in the eighth grade.

11. What is the study of language?

A. The study of language is the study of words and of the proper use of them in expressing what we have to say.

12. What does grammar show?

A. Grammar shows how words are made, how their forms are changed, and how they are put together in sentences according to their kind.

13. Under what heads may the subject of composition be treated?

A. (1) The Selection of a Subject.

(2) The Cumulation of Materials.

(3) Plan of Construction.

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(4) The Construction of a Composition.

14. Name the chief varieties of composition.  
A. Narration, Description, Exposition, Argumentation, Oratory, and Poetry.

15. What is narration?  
A. Narration is the form of composition that recounts a series of events.

16. What is description?  
A. Description is the form of composition that tells the qualities of things. It is a picture in words.

17. What is exposition?  
A. Exposition is the form of composition that aims to explain (expound) any general term or general proposition.

18. What is argumentation?  
A. Argumentation is the form of composition in which the aim is to modify or induce belief by means of argument.

19. What is persuasion, or oratory?  
A. Persuasion, or oratory, is that form of composition the aim of which is to induce the hearers to act.

20. What is style?  
A. Style as applied to language means the manner of expressing thought.

21. What is diction?  
A. Diction is that part of style which deals with the choice and use of words.

22. Paraphrase, "He speaks the truth."  
A. He tells no lies. He is truthful. He is a man of his word.

23. What are included in the mechanical processes in the making of a composition?  
A. The manuscript, capital letters, punctuation and indentation of paragraphs.

24. What rule should be observed?  
A. 1. Choose a familiar subject.  
2. Know what you want to say and say it in your own language.  
3. Write legibly and neatly.  
4. Do not crowd your writing.  
5. Write on only one side of the paper.  
6. Write the title above the theme.  
7. Leave a margin of about an inch and a half.  
8. Indent your paragraphs.  
9. Number the pages of your manuscript.

25. What is the topic sentence of a paragraph?  
A. The topic sentence is the sentence that states the topic. It is usually the first sentence in the paragraph.

26. Make an outline for a composition on Letter-Writing.  
A. 1. Importance.  
2. Kinds of letters.  
1. Business.

2. Social.
3. Public.
3. Parts of a letter.
  1. Heading.
  2. Address.
  3. Salutation.
  4. Body.
  5. Complimentary close.
  6. Signature.
  7. Superscription.
4. Capitals.
5. Punctuation.

### ENGLISH SYNONYMS

**Abandon**—desert, forsake.

**Abase**—depress, debase, disgrace.

**Abhor**—hate, detest, abominate, loathe.

**Abide**—stay, continue, remain.

**Ability**—capacity, capability, competence.

**Abode**—habitation, dwelling, residence, house.

**Abridge**—abbreviate, compress, contract, epitomize, condense.

**Abrupt**—sudden, unexpected, unforeseen.

**Accomplish**—effect, achieve, execute, perform, complete, realize, fulfill.

**Account**—description, explanation, narration, history, story.

**Actual**—real, true, authentic, certain, genuine, positive.

**Advice**—counsel, information, instruction.

**Affront**—insult, indignity, outrage.

**Aim**—purpose, intention, design, object, end, scope.

**Allay**—calm, quiet, soothe, compose, appease, soften.

**Alone**—solitary, desolate, forlorn, lonely.

**Amiable**—lovely, sweet, gentle, kind, obliging.

**Attempt**—effort, endeavor, trial, experience.

**Barren**—sterile, unfruitful, unproductive.

**Beam**—ray, gleam, glitter.

**Becoming**—decent, benefiting, suitable, fit.

**Bury**—inter, entomb, conceal.

**Certain**—sure, infallible, secure, doubtless.

**Clever**—expert, dexterous, adroit, ready.

**Contrive**—devise, plan, scheme, invent.

**Danger**—peril, hazard, risk, jeopardy.

**Dead**—lifeless, deceased, defunct, inanimate.

**Disciple**—adherent, follower, partisan.

**Dull**—stupid, doltish, blockish, slow of understanding.

**Expensive**—costly, sumptuous, valuable.

**Expert**—dexterous, skillful, ready.

**Faint**—weak, feeble, languid, exhausted, low.

**Follower**—adherent, partisan, dependent.

**Force**—compel, coerce, constrain, oblige.

**Form**—shape, mold, fashion, model, modify.

**Gay**—merry, jovial, sportive, frolicsome.

**Genteel**—polite, well-bred, gentlemanly, urbane, courteous, polished refined.

**Genuine**—real, authentic, natural, pure.

**Godly**—holy, sanctified, righteous, pious, religious, devout.

**Grateful**—thankful, impressed, mindful.

**Grief**—sorrow, regret, lamentation, weeping, mourning, affliction.

**Handsome**—elegant, nice, beautiful.

**Harbor**—haven, port, bay, inlet.

**Heretic**—schismatic, sectarian, skeptic, infidel, unbeliever, disbeliever.

**Honesty**—integrity, rectitude, uprightness, justice, purity, sincerity.

**Idle**—unemployed, inactive, leisure, vacant.

**Indifferent**—neutral, careless, heedless, regardless, unconcerned.

**Infection**—contamination, taint, pollution, poison, vitiation, defilement.

**Jealousy**—suspicion, fear, apprehension, caution, vigilance, envy.

**Joy**—ecstasy, rapture, transport, exultation.

**Justice**—law, legality, right.

**Kill**—murder, assassinate, slay, massacre.

**Kingdom**—realm, state, territory, country.

**Large**—big, great, huge, spacious, roomy.

**Lavish**—prodigal, wasteful, wanton, profuse, extravagant.

**League**—confederacy, alliance, covenant, union, combination.

**Lie**—falsehood, untruth, mendacity, fabrication, fiction, fib.

**Lucky**—fortunate, successful, prosperous.

**Lusty**—fat, corpulent, stout, robust, vigorous, healthful.

**Many**—manifold, multiformal, several, divers, sundry, various, numerous.

**Mechanic**—artisan, artist, workman.

**Mistake**—error, misconception, misunderstanding.

**Move**—impel, carry, convey, draw.

**Naked**—bare, nude, uncovered, undressed.

**Nice**—soft, delicate, tender, dainty, fine, sweet, delicious.

**Noted**—conspicuous, eminent, famous, celebrated, renowned.

**Nourish**—nurture, cherish, foster, support, maintain, encourage.

**Offspring**—child, descendant, progeny, issue, generation, production.

**Opinion**—sentiment, idea, notion, judgment.

**Overcome**—conquer, vanish, subdue, subjugate, overpower.

**Own**—acknowledge, avow, confess, admit, recognize.

**Part**—portion, piece, fragment, share, division, section.

**Party**—faction, clique, set, cabal, company.  
**Passive**—suffering, enduring, patient, unresisting.  
**Pest**—plague, pestilence, epidemic, infection, nuisance.  
**Petition**—request, supplication, prayer, suit, entreaty.  
**Plot**—conspiracy, intrigue, confederacy, combination, cabal.  
**Plunder**—pillage, rapine, prey, booty, spoil.  
**Prince**—sovereign, monarch, potentate, king, emperor, chief.  
**ruler.**  
**Promiscuous**—mingled, mixed, confused, undistinguished.  
**Quarrel**—wrangle, dispute, contest, jar, altercation, difference.  
**Quickness**—speed, velocity, fleetness, briskness.  
**Quiet**—rest, repose, peace, tranquility.  
**Ramble**—roved, wander, stroll, range, walk.  
**Reasonable**—rational, equitable, just, fair.  
**Religion**—godliness, piety, devotion, sanctity.  
**Repentance**—sorrow, pain, grief, regret.  
**Riches**—wealth, opulence, affluence, possessions, fortune.  
**Saving**—preserving, sparing, frugal, economical, thrifty.  
**Severe**—rigid, harsh, stern, austere, strict, hard, rigorous.  
**Shun**—avoid, eschew, evade, elude, escape.  
**Sorry**—grieved, pained, afflicted, affected.  
**Stream**—current, course, tide, river, rivulet.  
**System**—method, order, mode, manner.  
**Terrorify**—frighten, appal, alarm, dismay.  
**Tired**—fatigued, wearied, harassed, exhausted.  
**Trade**—business, traffic, barter, commerce, occupation.  
**Tumult**—commotion, disturbance, agitation, riot, broil.  
**uproar.**  
**Unbelief**—incredulity, infidelity, disbelief, distrust.  
**Unbury**—exhume, exhumate, disinter.  
**Unrelenting**—relentless, implacable, hard, inexorable, cruel.  
**Untimely**—premature, inopportune, unreasonable, ill-timed.  
**Vale**—valley, dale, dell, dingle.  
**Vaunting**—boasting, glorying, vainglory, ostentation, display, parade.  
**Vexation**—chagrin, mortification, teasing, trouble, uneasiness.  
**Wander**—roved, ramble, stroll, roam, range.  
**Waste**—spoil, ravage, desolation, havoc, loss, squandering.  
**Watchful**—vigilant, attentive, careful, heedful, observant, cautious.  
**Weary**—reduce, exhaust, tire, fatigue, harass.  
**Wicked**—evil, sinful, immoral, impious, profane, irreligious.  
**Wonder**—surprise, amazement, astonishment.  
**Work**—employment, occupation, labor, toil, drudgery.  
**Young**—youthful, juvenile, infantile.  
**Zeal**—ardor, heat, fervency, earnestness.  
**Zealous**—ardent, earnest, warm, fervent, solicitous, anxious, intense.

## SYNONYMS DISCRIMINATED

**Artisan**—one skilled in a mechanical art.  
**Artist**—one who pursues one of the fine arts.  
**Authentic**—not false (history, memoirs, etc.).  
**Genuine**—not spurious (manuscript).  
**Expect**—to look forward to. We expect trouble.  
**Hope**—to look for with desire. We hope for success.  
**Ancient**—when not modern.  
**Antiquated**—when out of fashion.  
**Adjacent**—when near to each other.  
**Adjoining**—meeting at some point.  
**Empty**—when there is nothing in it.  
**Vacant**—when the usual occupant is absent.  
**Fertile**—applied to soil.  
**Fruitful**—applied to plants, animals, and soils.  
**Grandeur**—of the ocean.  
**Sublimity**—of the heavens.  
**Competition**—strife for the same object.  
**Emulation**—desire to excel others.  
**Rivalry**—a personal, selfish contest.  
**Allow**—what in fairness ought to be granted.  
**Admit**—what is due in the case.  
**Firmness**—belongs to the will.  
**Constancy**—belongs to the affections and principles.  
**Beseech**—belongs more to the feeling.  
**Entreat**—belongs to argument.  
**Repentance**—sorrow for past acts, with a change of conduct.  
**Penitence**—sorrow for sin.  
**Lonely**—melancholy or forsaken.  
**Solitary**—absence of life or society.  
**Noted**—well known, favorably or eminently.  
**Notorious**—usually carries an unfavorable meaning.  
**Peaceable**—inclined to peace.  
**Peaceful**—generally in a state of peace.  
**Eternal**—having neither beginning nor end.  
**Everlasting**—without end.  
**Watch**—infers a strict, constant, close, and eager observation.  
**Observe**—infers coolness in observation.  
**Education**—trains the mind.  
**Instruction**—fills the mind with information.  
**Character**—the sum of one's qualities.  
**Reputation**—what others think of him.  
**Hunt**—searching after.  
**Chase**—driving away, or before.  
**Invalid**—one not strong in health.  
**Patient**—one suffering under disease.  
**Invasion**—the act of a regular army.  
**Incursion**—a hasty and sudden invasion.

**Kill**—a general and indefinite term.

**Murder**—to kill with open violence and injustice.

**Assassinate**—to murder by surprise, or by means of lying in wait.

**Outlive**—to live longer than another.

**Survive**—to live beyond any given period.

**Recline**—to lean back.

**Repose**—to place one's self back.

**Remember**—to call to mind readily.

**Recollect**—to recall with effort.

**Convince**—by argument.

**Persuade**—by advice and entreaty.

**Healthful**—gives health.

**Healthy**—has health.

**Robber**—one who takes unlawfully by violence or compulsion.

**Thief**—one who takes unlawfully in secret.

**Servant**—one who serves, whether voluntarily or involuntarily.

**Slave**—one compelled to serve.

**Specimen**—represents a class of things.

**Sample**—a part of the thing, showing the quality of the whole.

**Teach**—to impart instruction.

**Learn**—to receive instruction.

**Custom**—the repetition of an act.

**Habit**—the effect of repetition on character.

**Truth**—belongs to propositions.

**Veracity**—belongs to persons.

## AGRICULTURE

1. What is Agriculture?

A. Agriculture is the science which treats of the management of farms and the production of plants and animals that are useful to man.

2. What is horticulture?

A. Horticulture treats of the growing of fruits, vegetables, and ornamental plants.

3. What is floriculture?

A. Floriculture is the science which treats of the cultivation of flowers.

4. What is forestry?

A. Forestry is the growing of timber for lumber and wood, and to modify water supply.

5. What is the soil?

A. The soil is the surface of the earth down to solid rock.

6. What is the origin of soils?

A. All soils have been derived directly or indirectly by the disintegration of rocks, generally through the prolonged action of heat, cold, air, water, frost and ice.

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7. What is an agricultural soil?  
A. An agricultural soil is a soil made up of finely pulverized earth, soil water, soil air, decaying organic matter, and living organisms.
8. What is the subsoil?  
A. The subsoil is the harder and colder earth under the top soil.
9. How does it differ from the top soil?  
A. It contains less organic matter; it is lighter in color; it is more compact; it contains less plant food; and it is less finely divided.
10. Name the principal kinds of soil.  
A. Sandy, clay, loam, and limestone.
11. What three substances may be regarded as the basis of soils?  
A. Sand, clay, and humus.
12. Which of these is the finest in texture?  
A. Clay. It is composed mainly of fine, sticky, plastic material. It contains over 50 per cent of clay.
13. What is a sandy soil?  
A. A sandy soil is one composed in large part of sand. It contains more than 70 per cent of sand.
14. What is humus?  
A. Humus is partly decayed organic matter, as decaying leaves, roots and animal life.
15. What is a loam soil?  
A. Loam is composed of a mixture of sand, clay and humus.
16. What are the uses of humus?  
A. It binds together the particles of sand; it makes clay less adhesive or sticky; it increases the water-holding power of the soil; it loosens heavy soil; it promotes aeration; it encourages the growth of helpful bacteria.
17. What is a limestone soil?  
A. A limestone soil is one derived from limestone rock.
18. What is meant by vegetable swamp soils?  
A. Swamp soils that consist almost entirely of vegetable matter.
19. What are alkali soils?  
A. Alkali soils are soils that contain large deposits of mineral salts, which impede the growth of vegetation.
20. What are arid soils?  
A. Arid soils are unwatered soils, as parts of Arizona, New Mexico, Utah and Nevada.
21. What are humid soils?  
A. Humid soils are those that have plenty of rain, as the Mississippi Valley, Western Washington, etc.
22. Name the important metallic elements of the soil.  
A. Iron, calcium, magnesium, potassium, sodium and aluminum.

23. Name the most important non-metallic elements of the soil.
  - A. Silicon, sulphur, phosphorus, chlorine, oxygen, hydrogen, nitrogen and carbon.
24. Name the two most abundant elements in the soil.
  - A. Oxygen and silicon.
25. From what two sources does a plant derive its food?
  - A. From the soil and from the air.
26. Which source furnishes the greater part?
  - A. The air furnishes about 95 per cent.
27. Name the elements derived from the air.
  - A. Carbon, oxygen, hydrogen and nitrogen.
28. How is nitrogen in the soil or in the air prepared for plant use?
  - A. By little organisms called bacteria.
29. What food is taken in by the leaves?
  - A. Carbon dioxide, which is formed by carbon and oxygen.
30. What is a fertile soil?
  - A. A fertile soil is any soil that is in a condition to produce good crops under ordinary tillage.
31. What does a fertile soil contain?
  - A. Vegetable and animal matter in a partly decayed condition; also the chemical elements necessary for plant growth.
32. What is the chief cause of decreased productivity of the soil?
  - A. Constant cropping. Each crop removes a certain amount of nitrogen, potash and phosphoric acid. These are three most valuable elements in commercial fertilizers.
33. Mention other causes of decreased production.
  - A. Erosion by wind or water; the exhaustion of humus; unfavorable conditions for the development of soil organisms.
34. How can a "run-down" soil be restored?
  - A. By supplying humus and whatever plant food the soil lacks.
35. What are the best sources of humus in the soil?
  - A. Barnyard and green manures.
36. What is meant by green manures?
  - A. Green manures are crops plowed under when green.
37. What are the best green crops for soil improvement?
  - A. The legumes, such as cowpeas, crimson clover, beans, etc.
38. Why are the legumes valuable plants to the farmer?
  - A. Because the tubercles on their roots are the homes of helpful bacteria.
39. What is the most costly plant food?
  - A. Nitrogen.
40. Where do plants get their supply of nitrogen?
  - A. They get it all from the soil.
41. Where does the soil get nitrogen to supply growing crops?

A. A small part is deposited from the air by rain water, but most of it is taken from the air and stored in the soil through the activity of bacteria living in the tubercles on the roots of the legumes.

42. How may the mechanical condition of the soil be improved?

A. By proper cultivation; by drainage and irrigation; by adding humus and lime.

43. How does lime benefit the soil?

A. Lime improves the physical condition of some soils. It corrects acidity. It helps to liberate plant food. It aids helpful bacteria.

44. Why is water needed in the soil?

A. To dissolve the plant food.

45. What two kinds of water exist in the soil?

A. Free water and film water.

46. What is free water?

A. Free water occupies the pore spaces between the soil particles, and may be removed by drainage.

47. What is meant by film water?

A. Film water is the film moisture or thin coat of moisture on each soil grain. It is also called capillary water.

48. How do they differ in movement?

A. The free water moves downward by gravity. The film or capillary water can move in any direction by adhesion, just as oil moves in a lamp wick, or as ink moves in a blotter.

49. What is tillage?

A. Tillage is the breaking up and pulverizing of the soil to increase the growth of plants.

50. What is intertillage?

A. Intertillage is tillage among growing plants.

51. What are the chief benefits of tillage?

A. It increases the plant food supply, destroys weeds, regulates soil moisture, and admits air and heat to the soil.

52. What are the chief benefits of drainage?

A. Drainage removes the excess of free water, aerates the soil, warms the soil, conserves moisture, and permits early plowing in the spring.

53. How does drainage conserve moisture?

A. The soil being more porous, receives and holds the rainfall better, and promotes capillarity from the table water below.

54. What is the best kind of drainage?

A. The tile system is the best, and tile drains are probably the cheapest that can be used. Surface ditches and stone under-drains are used.

55. Where does the water enter the tiles?

A. The water runs into the tiles at the joints and trickles in through the porous walls.

56. Name the parts of a plant.

A. Root, stem, leaf, flower, and seed.

57. What are the functions of roots?

A. To hold the plant in place; to absorb soil water containing dissolved plant food; to serve as storage places for plant food.

58. How is plant food absorbed by the roots?

A. By osmosis, or the passing of liquids from one side of a membrane to another.

59. What are the uses of the stem?

A. The stem supports the leaves, buds, flowers and fruit or seeds; serves as a store house for plant food; and serves as channels for the passage of sap.

60. What are the functions of the leaves?

A. They are the breathing and digesting organs of the plant.

61. Name the parts of a flower.

A. (1) Calyx, with parts called sepals; (2) Corolla, with parts called petals; (3) Stamen, with parts called filament, anther and pollen; (4) Pistil, with parts called stigma, style, and ovary.

62. What parts has a perfect flower?

A. The pistil, or female part, and the stamens, or male parts. An imperfect flower has not both male and female parts.

63. How do imperfect flowers bear seed?

A. The pollen is carried to the flower having the pistil by the wind, or by insects.

64. As to length of life, how are plants classified?

A. Annuals, biennials, and perennials.

65. What is an annual?

A. A plant that bears seed the first year, then dies.

66. What is a biennial?

A. A plant that produces seed the second year, then dies.

67. What are perennials?

A. Plants that live more than two years.

68. What is meant by rotation of crops?

A. Rotation means that the crops grown on each field are changed from time to time in some regular order.

69. What are some of the benefits of rotation?

A. Rotation destroys weeds, adds humus and nitrogen to the soil, avoids diseases and insects, and economizes labor.

70. Name plants that add nitrogen.

A. Clover, alfalfa, cow-pea, and soy-bean.

71. Name crops that remove much nitrogen from the soil.

A. Tobacco, corn, wheat, and oats.

72. What do the forage crops include?

A. All crops used as green or dry feed, including crops for pasturage.

73. Name the most valuable farm crops.

A. Grass, corn, wheat, cotton, oats, potatoes, and tobacco.

This is the order in which they rank.

74. Name the fiber crops.
  - A. Cotton, flax, and hemp.
75. What are the sugar-producing plants?
  - A. Sugar cane, sorghum, and sugar beets.
76. What are cereals?
  - A. Cereals are plants of the grass family that are raised for the food contained in their seeds, such as corn, wheat, rice and oats.
77. What are silos?
  - A. Silos are air-tight buildings in which are stored green crops of any kind for winter use in feeding stock. The first silo in America was built in 1879.
78. What is the best silage material?
  - A. Corn. Alfalfa, clover, soy-beans, and cow-peas are used to some extent.
79. What two types of cotton are raised in the United States?
  - A. Sea island and upland.
80. What are insects?
  - A. An insect is a small animal that breathes air through its body, has six legs, usually has wings, and has a body divided into three parts,—head, thorax, and abdomen.
81. What are the stages in an insect's life?
  - A. Egg, larva, pupa, and imago.
82. Name the chief insect enemies of the farmer.
  - A. The Hessian fly, the chinch-bug, the codling-moth, the peach borer, the San Jose scale, the potato beetle, the plum curculio, the Mexican bollweevil, and the cotton-boll worm.
83. What is a weed?
  - A. A weed is a plant growing where it is not wanted.
84. How do weeds injure the farmer?
  - A. They use plant food, take up moisture, and increase the expense of cultivating the crops.
85. What is meant by the propagation of plants?
  - A. The propagation of plants is their reproduction by natural or artificial means.
86. What are the means by which plants in nature reproduce their kind?
  - A. Seeds, spores, rootstocks, stolons, suckers, bulbs, corms, and tubers.
87. Name two methods of grafting fruit trees.
  - A. Tongue or whip grafting and cleft grafting.
88. Give an important rule in grafting.
  - A. The cambium of the scions must come in contact with the cambium of the stock.

89. What are the objects in feeding farm animals?  
A. To make them grow; to keep them warm and active; to furnish special products.

90. What is a feeding standard?  
A. Experiments have been conducted in order to determine what is the best proportion of the different nutrients, and how much of each is required daily by an animal weighing one thousand pounds. The results are embodied in what are called "feeding standards."

91. What is the nutritive ratio?  
A. It is the proportion of digestible protein to digestible carbohydrate contained in feeding stuff.

92. What is a balanced ration?  
A. A balanced ration is a statement of the quantities of various feeds that will provide a nutritive ratio that is proper.

93. What is the balanced ration usually given for a dairy cow and a work horse?  
A. One with a ratio 1:6; that is, six times as much carbohydrates as protein.

94. Name the two distinct types of horses.  
A. Draft horses and driving horses.

95. What are the best known draft breeds?  
A. The Percheron, from the province of Perche in France; the Clydesdale, the draft horse of Scotland; the Belgian Draft, developed by Belgian farmers; the English Shire, developed in the eastern part of England.

96. What are the leading breeds of driving horses?  
A. The Cleveland Bay, the French Coach, the German Coach, and the English Hackney.

97. For what two main purposes are cattle kept?  
A. For the production of milk and for the production of beef.

98. Name the two chief classes of cattle.  
A. The beef breeds, and the dairy breeds.

99. How do they differ in form?  
A. The dairy breed are wedged-shaped and the beef breed are rectangular in shape.

100. Name the chief beef breeds.  
A. The Shorthorn, the Hereford, the Polled Angus, and the Galloway.

101. Name the chief dairy breeds.  
A. The Jersey, the Guernsey, the Holstein, and the Ayrshire.

102. What is the Babcock milk-tester?  
A. It is a machine invented by Dr. S. M. Babcock, of Wisconsin. By its use the amount of butter-fat in a given sample of milk may be determined.

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103. Name some diseases of cattle?  
A. Tuberculosis, milk fever, black-leg, and Texas fever.

104. For what purposes are sheep kept by farmers?  
A. For their wool and for their mutton.

105. Name the two types of sheep as to form of the body.  
A. The mutton type—blocky in form, and the wool type—lean and angular in form.

106. What are the best-known mutton breeds?  
A. The Southdown, the Shropshire, the Hampshire, the Oxford, and the Dorset.

107. Name the type of sheep as to the kind of wool produced.  
A. (1) Fine-wool breeds, as the Merino, the Delaine, and the Rambouillet; (2) the middle-wool breeds, as the Southdown, the Shropshire, the Dorset, the Hampshire, and the Oxford; (3) the long-wool breeds, as the Lincoln, the Leicester, and the Cotswold.

108. Name the large breeds of swine.  
A. The Chester White, the Improved Yorkshire and the Tamworth.

109. What are the most popular of the medium breeds?  
A. The Berkshire, the Poland-China, the Duroc-Jersey, and the Cheshire.

110. Name the most popular kinds of poultry.  
A. Chickens, turkeys, ducks, and geese.

111. How are breeds of chickens classified?  
A. (1) The meat breeds,—Brahma, Cochin, Langshan, and Dorking; (2) The general-purpose breeds,—Plymouth Rock, Wyandotte, Rhode Island Red, and Orpington; (3) The egg breeds,—Leghorn, Minorca, Black Spanish, etc.

112. Name breeds of ducks.  
A. The Pekin duck is the best for profit; the Rouen, the Cayuga, and the Aylesbury are also important breeds.

113. Name two popular breeds of turkeys.  
A. The Bronze and the White Holland.

114. What are the principal breeds of bees?  
A. Cyprian, Italian, and Caucasian.

115. What three kinds of bees are found in a colony or swarm in the spring?  
A. One queen, several hundred drones and from thirty-five to forty thousand workers.

## ARITHMETIC PROBLEMS

1.  $\frac{2}{3}$  of the difference between two numbers is 16; the smaller number is 12, what is the greater? Ans. 36.

2. A has  $\frac{3}{4}$  of \$8560, which is  $2\frac{1}{2}$  times B's money; how much money has B? Ans. \$2,568.

3. What is the smallest sum of money for which I could hire workmen for one month, paying either \$30, \$48, or \$60 a month? Ans. \$240.

4. On what sum of money is \$100 the difference between the interest calculated at 4 per cent per annum and that at  $3\frac{1}{2}$  per cent for every 10 months? Ans. \$50,000.

5.  $24+12\times 13-3=\text{what?}$  Ans. 177.

6.  $24+12\times(13-3)=\text{what?}$  Ans. 144.

7.  $(24+12)\times 13-3=\text{what?}$  Ans. 465.

Remark.—The signs  $\times$  and  $\div$  cannot extend their power, forward or backward, beyond a  $+$  or a  $-$ , without the aid of the parenthesis.

8. A has \$2,000;  $\frac{3}{4}$  of his money + \$100 is  $\frac{4}{7}$  of B's; what sum has B? Ans. \$2800.

9. At what rate per cent per annum will any sum of money double itself at simple interest in 30 years? Ans.  $3\frac{1}{3}$ .

10. What number is that from which if we deduct  $\frac{3}{7}$  of itself and  $\frac{2}{9}$  of the remainder, there will be 28 left? Ans. 63.

11. A and B can do a piece of work in 2 days, A and C in 3 days, and B and C in 4 days; in what time can C alone do the work? Ans. 24 days.

12. A lot 320 feet long and 210 feet wide contains a gravel-walk 6 feet wide just inside. Find the area of the walk. Ans.  $690\frac{2}{3}$  sq. yds.

13. A loaned B \$50 at 6 per cent.; on payment \$75 was due. Find the time. Ans. 8 yr. 4 mo

14. A man can row a boat down stream 12 miles per hour, and up stream 6 miles per hour; how far can he go down and return in 24 hours? Ans. 96 mi.

15. A man owning 40 per cent. of an iron foundry sold 25 per cent. of his share for \$1246.50; what was the value of the foundry? Ans. \$12,465.

16. A's money is 20 per cent. more than B's; then B's money is how many per cent. less than A's? Ans.  $16\frac{2}{3}$ .

17. A walk 9 feet wide surrounds a square garden, the area of the walk being  $\frac{1}{4}$  of an acre, what is a side of the enclosed square? Ans.  $29\frac{1}{2}$  ft.

18. Bacon which costs 12 cents per pound wastes 15 per cent. before it is sold; at what price per pound must it be sold to gain 25 per cent? Ans.  $17\frac{11}{17}$  cts.

19. A ladder 82 feet long stands close against a building; how far must it be drawn out at the bottom that the top may be lowered 2 feet? Ans. 18 ft.

20. I spent 25 per cent of my money, then 10 per cent of

the remainder, and had \$567 left; what had I at first? Ans. \$840.

21. Find the difference between the compound interest and the annual interest of \$500, at 6 per cent. for 3 yr. 3 mo.

Ans. \$0.19.

22. Omitting days of grace, find the difference between the bank discount and the true discount of \$960, for 3 yr. 6 mo. at 8 per cent.

Ans. \$58.80.

23. What is the height of a tree which casts a shadow 36 feet long, if a staff 8 ft. 6 in. casts a shadow 12 ft. 9 in?

Ans. 24 ft.

24. What sum invested in U. S. 6 per cent. bonds at 105, will produce an annual income of \$600 in currency, when gold is worth \$120?

Ans. \$8,750.

25. I have a 60-day note of \$300 with which to buy wheat, at 75 cents per bushel; after discounting the note in bank at 10 per cent. how many bushels can I buy?

Ans. 393 bu.

26. I wish to borrow \$725 from a bank, for 60 days; for what sum must I give my note, if the rate of discount is 8 per cent?

Ans. \$735.29.

27. How many gallons of water will exactly fill a vessel which holds 110 bushels of grain?

Ans. \$1,025 gal.

28. A factor sold wheat on a commission of 2 per cent. for \$2,548; he then invested the net proceeds in corn at 50 cents a bushel, after retaining a commission of 4 per cent. How many bushels of corn did he buy?

Ans. 4,802.

29. A trader sold two cows at \$30 each, gaining 25 per cent on one, losing 25 per cent on the other, what was his gain or loss by the transaction?

Ans. \$4 loss.

30. A cube has an area of 2,400 sq. in.; find its solid contents.

Ans. 8,000 cu. in.

31. The principal is \$400, the interest \$137.60, and the time 4 yr. 3 mo. 18 da.; what is the rate?

Ans. 8 per cent.

32. If  $\frac{3}{4}$  of a farm is worth \$1,800, what is the value of  $\frac{5}{6}$  of it?

Ans. \$2,000.

33. A, B, and C dine on 8 loaves of bread; A furnishes 5 and B 3; C pays them 18 cents; how should A and B divide the money?

Ans. A  $1\frac{3}{4}$  c, B  $2\frac{1}{4}$  c.

34. In what time will \$126.50 give \$2.53 interest at 5 per cent?

Ans. 4 mo. 24 da.

35. Find the asking price of a hat, which cost \$1.20, so as to abate  $6\frac{1}{4}$  per cent. and still make a profit of 25 per cent.

Ans. \$1.60.

36. 100 eggs are placed in a right line, exactly 2 yards apart, the first being 2 yards from a basket; how far will a man travel who gathers them up singly, and places them in the basket?

Ans. 11 mi. 152 rd. 4 yd.

37. A window sill is just 40 feet from the ground; how far from the wall of the house must a ladder 50 feet long be placed to reach the sill?

Ans. 30 ft.

38. Find the diagonal of a room 40 feet long, 30 feet wide,

12 feet high. Ans. 51.4+ ft.

39. How large a square can be cut out of a circular board whose circumference is 100 inches? Ans. 22.5+ in.

40. How many feet of lumber in 21 planks, each 16 feet long, 18 inches wide, and 2 inches thick? Ans. 1,008 ft.

41. Divide the square root of 57,600 by the cube root of 512, and multiply the quotient by the cube of 4. Ans. 1,920.

42. A sphere is 4 feet in diameter; find its contents. Ans. 33.5104 cu. ft.

43. The area of a circle is 490.875 square feet; what is the diameter? Ans. 25.

44. If a ball 3 inches in diameter weighs 9 pounds, what is the weight of a ball 4 inches in diameter? Ans.  $21\frac{1}{3}$  lbs.

45. Compare the areas of two circles whose diameters are as 4:6. Ans. 16 : 36.

46. I bought a horse for \$70 cash, and sold him for \$84, at a credit of 10 months; reckoning the interest at 6 per cent, how much did I gain? Ans. \$10.

47. The boundaries of a square and circle are each 64 feet; find the difference between the areas. Ans. 69.93 sq. ft.

48. Find the solid contents of a cone, diameter of base being 20 feet, altitude 30 feet. Ans. 3141.6 cu. ft.

49. A cubical cistern holds 200 gallons; what is its depth? Ans. 35 in.

50. The solidity of a sphere is 33.5104 cu. ft.; what is the diameter? Ans. 4 ft.

51. Find the cost of fencing a square lot, containing 160 acres at the rate of \$4 per rod. Ans. \$2560.

52. A general wishes to place 7,225 men in the form of a square; how many must he put in each line? Ans. 85.

53. Find the area of a triangle whose sides are 16, 18, and 20 feet. Ans.  $136\frac{1}{2}$  sq. ft.

54. A field containing 8 a. 72 sq. rd. is twice as long as it is wide; find the cost of fencing it at 20 cents per rod. Ans. \$31.20.

### PROBLEMS AND HOW TO SOLVE THEM

1. A buys 16 cows and 8 horses for \$960, and B buys 24 cows and 6 horses of equal quality for the same amount. What is the cost of each horse? Ans. \$80.

**Hint**—Since B buys 8 more cows and 2 fewer horses than A, the value of 8 cows is equal to that of 2 horses.

2. What is the length of the longest chain that will measure exactly the length and the width of a field 697 rods long and 391 rods wide? Ans. 17 rods.

**Hint.** Find the greatest common divisor.

3. Find the least number of apples that arranged in groups of 6, 8, 9 or 12 have just three over in each case. Ans. 75 apples.

**Hint.** Add 3 to the least common multiple.

4. A pair of horses, carriage, and harness cost \$570. If the carriage cost 40 per cent. less, and the harness 70 per cent less than the horses, what was the cost of the horses? Ans. \$300.

**Hint.** The cost of all equals 190 per cent. of the cost of the horses.

5. If I sell one-half of an article for as much as three-fourths of it costs me, what per cent do I gain? Ans. 50 per cent.

**Hint.** The whole article would bring one and one-half times as much as the article cost.

6. A man bought a horse for \$150. How much must he ask for the horse so that he can fall 10 per cent. and still make 20 per cent. profit?

#### SOLUTION

Let 100% = the asking price.

10% = the discount from asking price.

Then  $100\% - 10\% = 90\%$ , the selling price.

20% of \$150 = \$30, the profit.

$\$150 + \$30 = \$180$ , the selling price.

Therefore  $90\% = \$180$ .

$1\% = \$2$ .

$100\% = \$200$ , the asking price.

7. A spends  $\frac{4}{5}$  of his income, and B, having the same income, spends  $1\frac{1}{3}$  times as much as A, and finds himself \$75 in debt at the end of the year. What is the income of each?

#### SOLUTION

Let 30% = the annual income of each.

$\frac{4}{5}$  of 30% = 24%, amount spent by A.

$1\frac{1}{3} \times 24\% = 32\%$ , amount B spends.

$32\% - 30\% = 2\%$ , B's indebtedness.

Therefore  $2\% = \$75$ .

$1\% = \$37.50$ .

$30\% = \$1125$ .

8. A cylinder is 10 inches in diameter and 10 inches long. What part of the cylinder is lost in shavings if the largest possible sphere is cut from it?

#### SOLUTION

100 = the square of the diameter of the cylinder.

$100 \times .7854 \times 10 = 785.4$  cu. in., the volume.

10 inches = the diameter of the sphere.

1000 = the cube of the diameter.

$1000 \times .5236 = 523.6$  cu. in., the volume.

$785.4 - 523.6 = 261.8$ , the number of cubic inches lost.

$261.8 \div 785.4 = 1/3$ , the part lost in shaving.

9. A farmer engaged a man to work for him for a year for \$216 and a suit of clothes; the man left at the end of 10 months and received \$175 and the suit of clothes. What was the value of the suit?

## SOLUTION

$\$216 - \$175 = \$41$ , two months' wages.

$\$41 \div 2 = \$20.50$ , one month's wages.

$10 \times \$20.50 = \$205$ , salary for ten months.

$\$205 - \$175 = \$30$ , value of the suit of clothes.

10. A grocer mixes equal amounts of 36c tea and 60c tea and sells the mixture at 56c a pound. What is his per cent. of profit?

## SOLUTION

$36c + 60c = 96c$ , cost of 2 lbs. of the mixture.

$96c \div 2 = 48c$ , cost of 1 lb. of the mixture.

$56c - 48c = 8c$ , gain per lb.

$8 \div 48 = .16 \frac{2}{3}$  = the gain per cent.

11. Which is better, and how much better annually, to invest \$33,750 in 5% bonds at 150, or 4% bonds at 135?

## SOLUTION

$\$33750 \div 1.50 = \$22500$ , amount of the 5% bonds.

5% of  $\$22,500 = \$1125$ , income annually.

$\$33750 \div 1.35 = \$25000$ , the amount of the 4% bonds.

4% of  $\$25000 = \$1000$ , income annually.

$\$1125 - \$1000 = \$125$ , gain by the first.

12. The battle of Manila ( $121^{\circ} 20'$  E.) began at 5:41 A. M. Sunday, May 1. What was the time at Washington ( $77^{\circ} 3'$  W.) when the battle began?

## SOLUTION

$121^{\circ} 20'$  E. = longitude of Manila.

$77^{\circ} 3'$  = longitude of Washington.

$198^{\circ} 23'$  = difference of longitude through Greenwich.

$360^{\circ} - 198^{\circ} 23' = 161^{\circ} 37'$  difference of longitude.

$61^{\circ} 37'$  corresponds to 10 hrs. 46 min. 28 sec. of time.

This time after 5:41 A. M. Saturday gives 27 min. 28 sec. past 4 o'clock P. M. Saturday, considering the International Date line.

13. John agreed to labor on condition that for every day he worked he should receive \$1.50, and for every day he was idle he should pay 50c for his board. At the expiration of 60 days he received \$68. How many days did he work?

## SOLUTION

$60 \times \$1.50 = \$90$ , what he could have earned.

$\$90 - \$68 = \$22$ , loss by being idle.

$\$1.50 + \$0.50 = \$2$ , loss each day he was idle.

$\$22 \div \$2 = 11$ , number of idle days.

$60 - 11 = 49$ , number of days he worked.

14. The head of a fish is 9 inches long the tail is as long as the head and half the body, and the body is as long as the head and tail together. How long is the fish?

## SOLUTION

One half the length of the body, + 9 inches, equals the length of the tail, which added to the length of the head, equals  $\frac{1}{2}$  the length of the body, + 18 inches, which, by the condition of the problem, equals  $\frac{2}{3}$  of the length of the body. If  $\frac{2}{3}$  of the length of the body equals  $\frac{1}{2}$  the length of the body + 18 inches,  $\frac{1}{2}$  of the length of the body must equal 18 inches, which is  $\frac{1}{4}$  the length of the fish, 72 inches being the length.

15. If a man row 10 miles in  $2\frac{1}{2}$  hours against a current of a stream, the rate of which is 3 miles an hour, how long will he be in rowing 5 miles with the stream?

## SOLUTION

$$1 \div 2\frac{1}{2} = 2/5.$$

$2/5$  of 10 miles = 4 miles, the rate per hour against the stream.

$$3 \text{ miles} = \text{velocity of the current.}$$

$$4 \text{ miles} + 3 \text{ miles} = 7 \text{ miles, velocity in still water.}$$

$$7 \text{ miles} + 3 \text{ miles} = 10 \text{ miles, rate per hour down stream.}$$

$$5 \div 10 = \frac{1}{2}, \text{ the time in hours, as required.}$$

16. Find the volume of the frustum of a square pyramid, the sides of whose bases are 4 feet and 5 feet, respectively, and whose altitude is 9 feet.

## SOLUTION

$$4 \times 4 = 16, \text{ number of square feet in upper base.}$$

$$5 \times 5 = 25, \text{ number of square feet in lower base.}$$

$$\text{The square root of } 16 \times 25 = 20, \text{ the mean base.}$$

$$16 + 25 + 20 = 61, \text{ sum of three bases.}$$

$$1/3 \text{ of } 9 \text{ feet} = 3 \text{ feet.}$$

$$61 \times 3 = 183, \text{ the number of cubic feet.}$$

**Rule.**—To the sum of the area of both bases add the square root of the product and multiply this sum by one-third of the altitude.

17. What is the difference between the true and the bank discount of \$360, due 6 months hence, at 6%?

## SOLUTION

$$\$10.80 = \text{the bank discount for 6 months.}$$

$$\$1.03 = \text{amount of } \$1 \text{ for 6 months.}$$

$$\$360 \div 1.03 = \$349.51, \text{ the present worth.}$$

$$\$360 - \$349.51 = \$10.49, \text{ the true discount.}$$

$$\$10.80 - \$10.49 = \$0.31, \text{ the difference.}$$

18. A dealer bought two horses for \$150 each; on one he gained 25%, and on the other he lost 25%. How much did he lose by the transaction?

$$100\% = \text{cost of first horse.}$$

$$125\% = \text{the selling price.}$$

$$125\% = \$150, \text{ the selling price.}$$

$$1\% = \$1.20.$$

100%=\$120, cost of the first horse.

100% = the cost of the second horse.

25% = the loss.

75% = the selling price.

75%=\$150, the selling price.

1%=\$2.

100%=\$200, the cost of the second horse.

\$150+\$150=\$300, selling price of both horses.

\$200+\$120=\$320, cost of both horses.

\$320-\$300=\$20, the loss, as required.

19. The face of a draft, payable in 60 days, is \$2625; exchange being  $1\frac{1}{2}\%$  premium, and interest 6% what is the cost of the draft?

SOLUTION

\$1.015=rate of exchange.

\$0.0105=bank discount of \$1 (63 days).

\$1.015-\$0.0105=\$1.0045, cost of exchange for \$1.

\$2625  $\times$  1.0045=2636.81, the cost.

20. Find the interest and the amount of \$8000 for 5 yr., at 6%, interest payable annually.

SOLUTION

\$480=interest one year.

\$2400=interest five years.

10 years=the sum of 4 yr., 3 yr., 2 yr., 1 yr.

\$288=interest of \$480 for 10 years.

\$2400+\$288=\$2688, total annual interest.

\$8000+\$2688=\$10688, amount, as required.

21. If the interest on the sum of A's and B's money for 3 yr. 9 mo., at 8%, is \$3213, and  $2/3$  of A's money is equal to  $3/4$  of B's, how much has each?

SOLUTION

30c=interest on \$1 for the given time, at 8%.

\$3213  $\div$  .30=\$10710, their combined sums.

$\frac{2}{3}$  of A's= $\frac{3}{4}$  of B's.

$\frac{1}{3}$  of A's= $\frac{1}{4}$  of B's.

$\frac{3}{3}$  of A's= $\frac{9}{8}$  of B's.

Then  $\frac{9}{8}$  of B's=A's.

Let 16% = B's money, then 18% = A's.

16%+18=34%, what both have.

\$10710=what both have.

34%=\$10710.

1%=\$315.

16%=\$5040, B's.

18%=\$5670, A's.

## TEACHING

1. What is knowledge?  
A. Knowledge is that which is known.
2. What is mystery?  
A. Mystery is that which is not known.
3. What is science?  
A. Science is knowledge systematized and explained.
4. What is empirical knowledge?  
A. Knowledge derived through the senses.
5. What is rational knowledge?  
A. Knowledge of which reason is the source.
6. What is a mental power or faculty?  
A. The capability of the mind or soul to act in a definite way.
7. Give the threefold division of the mental faculties.  
A. (1) The Intellect, or those powers by which we know: (2) The Sensibilities, or the powers by which we feel: (3) the Will, or the power by which we choose and execute.
8. How is the intellect subdivided?  
A. Into four groups of powers or faculties: (1) Presentative (Perceptive), by which the mind knows immediately and directly present material objects; (2) Representative (Conceptive), by which it retains and recalls; (3) Reflective (Thought), by which it correlates; (4) Intuitive, by which it knows without proof.
9. Why is perception sometimes called **Sense-Perception**?  
A. Because present material objects are perceived by means of the special senses.
10. What is a sensation?  
A. A sensation is that simple mental state resulting from the stimulation of a sensory nerve.
11. What is a percept?  
A. A percept is a simple sense-product. By touch we gain percepts of surface and texture. Through sight we gain percepts of color, light and shade.
12. What is consciousness?  
A. Consciousness is the recognition by the thinking subject of its own acts and states. By some authors the term is used almost as a synonym for mind.
13. What do the representative orceptive powers include?  
A. Memory, imagination, and phantasy.
14. What is memory?  
A. Memory is the power of the mind to retain, revive, and recognize mental experiences.
15. What is imagination?  
A. Imagination is that power of the mind by which it makes pictures without the present help of the senses.

16. What is phantasy?

A. Phantasy (Fancy) is the power or act of conceiving in the mind strange, impossible, whimsical combinations of things. This spontaneous activity of the imaging power is usually occasioned by some nervous or sensorial excitement, which may be caused by indigestion, or other derangement.

17. What is a concept?

A. A concept is a product of conception. It is an object conceived in the mind.

18. Explain briefly the difference between perception and conception.

A. When an object is seen with the eyes, there is a perception of it, when the same object is presented to the mind in an idea only, or in memory, there is a conception of it.

19. What is apperception?

A. Apperception is that form of mental activity under which the mind calls upon past experiences to aid in interpreting a new experience.

20. What is attention?

A. Attention is the direction of the mind to any object.

21. Name three kinds of attention.

A. (1) Voluntary, in which the will directs the mind; (2) Involuntary, in which the mind is drawn by interest; (3) Expectant, in which the mind dwells upon something expected.

22. What are the principal divisions of the Reflective or Thought Power?

A. Judgment and reason.

23. What are the various appellations by which different authors designate the Thought Power?

A. The Understanding, the Intelligence, the Reason, the Rational Faculty, the Elaborative Faculty, the Reflective Faculty, the Thought Power, or Thought.

24. What is judgment?

A. Judgment is the power of the mind to discern and affirm agreements and disagreements of objects of thought.

25. What is reasoning?

A. Reasoning is the process by which we reach conclusions.

26. What are the two kinds or processes of reasoning?

A. Induction and deduction.

27. What is induction?

A. Induction is the process of reasoning from a particular judgment (a judgment concerning individuals) to a general judgment. Example: (1) This sheep is woolly; (2) The same thing is true of all observed sheep; (3) Therefore, all sheep are woolly.

28. What is deduction?

A. Deduction is the process of reasoning from a general to a particular judgment. Example: (1) All sheep are woolly, (2) This animal is a sheep; (3) Therefore, this animal is woolly.

## 29. Define Psychology.

A. Psychology is the science of the human mind. It treats of the activities and powers of the mind.

## 30. What mind powers should be especially cultivated during the first ten or twelve years of the child's life?

A. Sensation, perception, and memory.

## 31. Define Education.

A. Education is the development and cultivation of all the human powers—physical, mental, and moral. The end is knowledge, power, and skill.

## 32. What are the three principal divisions of Education?

A. (1) Physical Education, which pertains to the development of the powers of the body; (2) Intellectual Education, which has for its aim the development of the intellectual powers; (3) Moral Education, which deals with the education of the will and conscience.

## 33. As to grades and kind of instruction, how is Education divided?

A. Elementary, Secondary, Higher, Professional, and Special Education.

## 34. What does Elementary Education include?

A. Instruction in common and graded schools below the high school academy.

## 35. What does Secondary Education include?

A. Instruction in high schools, academies, and other schools of similar grade.

## 36. What is meant by Higher Education?

A. Instruction in colleges and universities.

## 38. What is the purpose of Professional Education?

A. The training for special vocations, as medicine, law, engineering, etc.

## 39. Mention five great factors in formal education.

A. The home, the school, the press, the pulpit, and the platform.

## 40. What is teaching?

A. (1) "Teaching is the process by which one mind, from set purposes, produces the life-unfolding process in another."—**Tompkins**.

(2) "Teaching is consciously doing three things—instruction, developing, training."—**Roark**.

(3) "Teaching is simply helping the mind to perform its function of knowing and growing."—**Laurie**.

## 41. What is instructing?

A. Instructing is directly giving information.

## 42. What is training?

A. "Training is the occasioning and directing of the pupil's activities in such a manner as to result in power and skill—mental, moral and physical."—**Dr. White**.

## 43. What is testing?

A. Testing is the disclosing of the pupil's attainments.

44. What is meant by Method in teaching?

A. Method in teaching is the systematic way in which objects and subjects are presented to the mind of the pupil.

45. What is meant by "normal methods" of teaching?

A. Methods which follow the correct principles in the perfect growth of the child's physical, mental and moral nature by means of proper exercise.

46. What is the analytic method of teaching?

A. It is the method in which the teacher begins with a whole and proceeds to its elements or parts, as in the sentence method of teaching reading.

47. What is the synthetic method of teaching?

A. That in which the teacher begins with the elements or parts and proceeds to the whole.

48. What is the inductive method of teaching?

A. The inductive method of teaching begins with individual facts and by induction reaches a general principle, or rule. It closely resembles the synthetic method. However, it is used as a means of reaching principles and rules, while the synthetic method is a means of forming concepts and classes.

49. What is the deductive method of teaching?

A. That in which the rule, or principle, or definition, is learned first, then application is made of it to particular cases.

50. Which of these methods should be used in primary instruction?

A. The inductive method. Induction completes itself in deduction, therefore the combined method should be followed quite early.

51. Why should the powers of observation be carefully trained?

A. Because it is by these powers we gain knowledge through the senses. In psychology the powers of observation are known as sensation and perception (sense-perception).

52. Give hints on training attention.

A. (1) Create an interest in all work; (2) Encourage diligent study; (3) Let your pupils feel their success; (4) Do not make the work too difficult; (5) Preserve proper conditions for attention.

53. Quote Joseph Cook on interest.

A. "Interest is the mother of attention; attention is the mother of knowledge. If you would win the daughter, make sure of the mother and grandmother."

54. What is object teaching?

A. Instruction in which pupils obtain knowledge directly from an object through the senses.

55. State some of the advantages of lessons on objects.

A. (1) They furnish information; (2) They give habits of analytic observation; (3) They lead to habits of scientific inquiry.

56. What are the two general forms of recitation? :

A. Oral and written.

57. Mention three methods of the oral recitation.

A. (1) The Socratic (Question), as used by Socrates; (2) The Topical, pupils recite by topics; (3) the Lecture, used in professional schools.

58. What are some of the advantages of the written recitation?

A. (1) It is a drill in rapid writing; (2) It accustoms pupils to spell by the eye; (3) Each pupil is tested on the whole lesson; (4) It trains the pupils to express their thoughts on paper.

59. What are the prerequisites of the recitation?

A. (1) The proper assignment of the lesson; (2) The teacher's preparation; (3) The pupil's preparation; (4) Proper conditions for successful study.

60. State five objects of the recitation.

A. (1) To test the pupil's knowledge; (2) To enable the teacher to estimate the daily progress of the pupils; (3) To explain difficulties; (4) To cultivate the power of expression; (5) To excite and stimulate interest.

61. Mention some of the necessary qualifications of a teacher.

A. Scholarship, professional training, a knowledge of children, a cheerful and hopeful disposition, love for the work, firmness, patience, punctuality, and good health.

62. Give six maxims of elementary instruction.

A. (1) Observation before reason; (2) The concrete precedes the abstract; (3) Proceed from the simple to the complex; (4) Proceed from the known to the related unknown; (5) Facts should precede definitions; (6) Processes should precede rules.

63. What are the three fundamental ends of teaching?

A. Knowledge, power, and skill.—Dr. White.

64. Give Dr. Raub's laws of teaching.

A. (1) The human mind embraces a number of distinct faculties; (2) The faculties of the mind develop in a fixed order; (3) Self-activity is a law of mental growth; (4) The mind is both acquisitive and productive; (5) Human beings are created with different tastes and talents; (6) The human mind is finite.

65. Give Dr. Hewett's laws of teaching.

A. (1) Any power under the control of the will may be cultivated or trained; (2) The powers are trained in one way, and in one way only; viz., by wise use; (3) The wisest training will be directed to those powers that are conspicuously active at the time; (4) An indispensable prerequisite to any profitable training is careful attention to the matter in hand.

66. Give the law of sense-perception.

A. "There is nothing in the mind that has not first been in the senses."—Colgrove.

67. State the law of apperception.

A. "New experiences of every kind are interpreted and assimilated only by means of old experiences."—**Colgrove**.

68. Give the law of induction.

A. "In the earlier stages of learning, inductive thinking must precede deductive thinking."—**Colgrove**.

69. What is an incentive to study?

A. An incentive to study is a stimulus to effort.

70. Mention some proper incentives.

A. (1) A desire for approbation; (2) A desire for good standing; (3) A desire for knowledge and efficiency; (4) A hope of future success; (5) A sense of duty.

71. Mention some improper incentives.

A. (1) Infliction of pain; (2) Withholding of some pleasure; (3) Fear of ridicule; (4) Fear of shame; (5) Emulation.

72. What incentives are of doubtful benefit?

A. (1) Prizes; (2) Marks of honor; (3) Privileges—as holidays, early dismissals, choice of seats, etc.; (4) Immunities—as exemption from duty, tasks, etc.

73. What are the ends of school discipline?

A. Self-control, self-direction, right motives, and proper conditions for work.

74. What are the aims of the course of study?

A. (1) To provide proper arrangement of studies; (2) To furnish a definite standard; (3) To secure order and continuity of work; (4) To unify the work; (5) To secure the interest and co-operation of the patrons.

75. Why is reading the most important work of the first three years?

A. Because when reading is once mastered, all literature is within reach and the pupil passes at once from the dependent to the independent stage.

76. Name five methods in teaching beginners to read.

A. The alphabet method, the word method, the phonic method, the sentence method, and the combined method (the eclectic method).

77. Which of these methods was used almost universally in America until about 1870?

A. The alphabet method.

78. Explain the alphabet method.

A. This method teaches the letters first. The letters are combined into syllables, and the child is taught to spell the syllables; as, a-b, ab; a-t, at; a-n, an. Then words of one syllable are taught. Later, syllables are joined to make easy words, and words are joined to make sentences. Spelling syllables and words, and pronouncing them, comes before reading.

79. Describe the word method.

A. In this method words that represent familiar objects are taught as wholes without reference to the letters. The child learns to know the words by their forms. Such words as

a, an, the, is, are; my, etc., are early taught. Words are then combined in phrases and short sentences, which the child is taught to read. The letters are taught incidentally.

80. Describe the phonic method.

A. This method teaches the sounds of the letters before their names. The word is built of these sounds and their combinations. The words are then put into sentences. The rapid utterance of the sounds of the letters of a word will give the sound of the word itself.

81. What is the sentence method?

A. That in which the child is taught to recognize a short sentence as a whole. The sentence, not the letter, the sound, or the word, is the unit in this method.

82. What is the combined or eclectic method?

A. It is a union of the best parts of the other methods. It is probably the best method used in teaching primary reading.

83. What is supplementary reading?

A. Any reading given the pupil in addition to that in the regular reading book. Various primers and first readers should be read by pupils in the first grade.

84. Give causes of poor reading in school.

A. (1) Poor teaching; (2) Promotion before preparation; (3) Want of enough supplementary reading; (4) Selections too difficult; (5) The pupil does not feel what is read; (6) Poor expression.

85. How may history be made interesting to children?

A. By making it biographical. Give the facts, body and interest by putting in plenty of anecdotes and stories.

85. With what branches may history be correlated?

A. Drawing, reading, writing, literature, geography, and civil government.

86. When should the teaching of arithmetic begin?

A. Many courses of study provide for arithmetic (number) in the first grade. Some authorities advise postponing it until the fourth grade.

87. What is an abnormal child?

A. One that is noticeably larger or smaller, far superior or much inferior in mental powers or attainments than the majority of children of his age.

88. Give hints on making rules for the school.

A. Make but few definite rules; do not suggest possibilities of misbehavior; do not fix the penalty in advance; do not make a rule you cannot enforce; repeal a rule when no longer needed; lead the child to obey from a sense of duty; encourage self-control.

89. What does order involve?

A. Order involves the doing of the right thing in the right way, time, and place by the right person.

90. How may parental co-operation be secured?

A. By correspondence, occasional visits, school entertainments, residence among or near the parents, participation in local affairs, and aid of the local press.

91. What is the purpose of punishment?

A. To reform the offender and obtain proper discipline in the school.

92. Name some of the qualities necessary to a good disciplinarian.

A. Tact, sympathy, self-control, impartiality, firmness, love, cheerfulness, courage, and tidiness.

93. What is school economy?

A. School economy treats of the organization of the school, of building, ventilation, heating, seating, light, decoration, etc.

94. What are the chief objects of schoolroom decoration?

A. (1) To create a love for the beautiful; (2) To make the schoolroom attractive and homelike; (3) To furnish material for observation and thought.

95. What temperature should be maintained in the schoolroom?

A. From 64 to 74 degrees Fahrenheit.

96. Give two devices for admitting fresh air into the schoolroom.

A. (1) Lower the upper window sash. Warm air will pass out above the upper sash, while cooler fresh air will enter between the two sashes. (2) Raise the lower sash a few inches and insert a narrow board in the lower opening, so that a space is left between the sashes for the entrance of fresh air.

97. Give six rules for the formation of good questions.

A. (1) Questions should be simple, clear, definite, and concise; (2) They should be suited to the capacity of the class; (3) They should follow in proper sequence; (4) They must cause the pupils to think vigorously; (5) They must not suggest their own answers; (6) They must find out what the pupils do know, not what they do not know.

98. Who originated the kindergarten?

A. Friedrich Froebel, a German educational reformer.

99. What is the nature and object of the kindergarten?

A. Kindergarten is the name of a kind of school or training place for young children. It is an educative system of play. Its object is to develop all the faculties, cultivate observation, and generate a desire to learn by self-effort. The teacher's work is mainly direction.

100. Name other reformers in education.

A. John Amos Comenius, Jean Jacques Rousseau, John Henry Pestalozzi, John Frederick Herbart, and Horace Mann.

**TEACHERS' DUTIES**

(Compiled by Ex-superintendent Duane Doty, of Detroit)

**I. Duties of Teachers to Themselves.**

1. To use every effort to improve in the science and art of teaching, and in the art of school management.
2. To exercise a watchful care over every act and word, teaching by example as well as by precept.
3. To attend teachers' meetings and educational association.
4. To spare no pains to preserve your health.
5. To pursue some branch of study outside of your professional work.
6. To read your educational books and journals.

**II. Duties of Teachers to Each Other.**

1. To aid and encourage fellow teachers by a friendly appreciation and recognition of their work.
2. To give other teachers the benefit of methods you consider good.
3. To extend every courtesy and render every assistance to teachers just entering upon duty.
4. To sustain your fellow teachers in the discharge of duty.

**III. Duties of Teachers to School Property.**

1. To make the school room a pleasant and attractive place for children.
2. To ornament the school room, when practicable, with pictures, drawings, etc.
3. To take good care of all books, maps, charts, blanks and other school property entrusted to you.
4. To inspect daily the stoves, furniture and other school property, reporting any damage at once to the school board.
5. To take every precaution to guard against danger from fire.
6. To leave everything in satisfactory shape at the close of the school.
7. To improve the school grounds.

**IV. Duties of Teachers to Parents.**

1. To avoid wounding the feelings of any parent by word or manner.
2. To endeavor to secure the confidence and co-operation of parents in your efforts to benefit their children.
3. To know that a dispassionate conversation with a parent will almost always convince him that you are pursuing a correct course with his child.
4. To keep parents fully informed of the doings and progress of their children.

**V. Duties of Teachers to Pupils.**

1. To know that a pupil's true education is a growth consequent upon the proper exercise of all his faculties.

2. To know that growth and discipline come through the acquisition of useful knowledge.
3. To know that neglect, mistakes, blunders or carelessness on your part are disastrous to pupils and most difficult to remedy.
4. To remember that children are children, and need assistance in many ways, but that the most valuable work for a pupil, under wise guidance, is the work which he does for himself.
5. To be ever thoughtful of the future of your pupils, and to make all school work and discipline such as will be lasting service to them.
6. To remember that what a pupil grows to be is of more importance than what he lives to know.
7. To make yourself acquainted with the home influences affecting your pupils.
8. To talk to your pupils in a natural tone of voice.
9. To commend your pupils for all earnest work and effort.
10. To teach your pupils how to study.
11. To teach the reasons for, and the value of good school order.
12. To train your pupils to the habit of obeying the laws to health.
13. To train your pupils to do right because it is right.
14. To encourage a cheerful spirit in all school work.
15. To require nothing of a pupil that there is a doubt of his ability to do.
16. To notice faults in manner, conduct, and language and kindly correct them.
17. To understand thoroughly any complaint against a pupil before acting upon it.
18. To make no mention of former faults or irregularities that have been settled.
19. To be just and impartial in all your dealings with pupils.
20. To keep your school room at the proper temperature and well ventilated.

## PUNCTUATION MARKS AND HOW TO USE THEM

There is such a diversity of opinion on the subject of punctuation that we hesitate to lay down any rules whatever governing the use of punctuation marks. However, let it be understood at the beginning that these rules are not infallible. They are given only as a basis on which to work.

While the omission of punctuation marks may not mar the appearance of writing, as do bad spelling and improper use of capitals, its correct use is essential to the proper construction of a sentence. It is true that ludicrous, and sometimes serious, mistakes result from improper punctuation.

Punctuation, like everything else, has its underlying principles, and it is our endeavor to show here, by rules and examples, what constitutes these principles. With this information and an ordinary knowledge of grammar, teachers will be able to punctuate correctly, and they will be able to teach language with better results.

## The Period

The period is used—

1. After all sentences that are not interrogatory or exclamatory.

(Almost every sentence in this lesson is an illustration of this statement.)

## 2. After abbreviations.

Esq. (Esquire); Jas. (James); N. Y. (New York); Treas. (Treasurer);

3. After Roman numerals and Arabic figures when they are used to number lists of subjects, tables of contents, or any index matter.

In columns of index matter or tabulated work periods are sometimes used, thus:

VII. Abbreviations ..... 146

Such names as Will, Tom, Ben, Ed and Fred are not followed by periods, as they have become shortened names and are not, in a technical sense, considered as abbreviations.

Periods are not placed after words in which the omission of letters is indicated by an apostrophe; as rec'd (received).

It is now considered the best form to omit periods from the ends of lines arranged in indexed or tabulated form.

## The Colon

The colon is used—

1. After a formal introduction to a quotation, a speech, or an enumeration of items or particulars.

Wilson, in an article on punctuation, says: "To study literature is to study punctuation."

The order of display in commercial stationery is as follows: First, the firm name; second, the business; third, the address.

2. After the formal salutation of a letter.

Dear Sir:

We are in receipt of your letter dated the 3d inst., and in answer, etc.

3. Between a complete sentence and an additional clause which illustrates or explains the same idea without a conjunction.

The darkness of death is like the evening twilight: it makes all objects appear more lovely to the dying.—Richter.

4. Between two members of a compound sentence, when each member makes a distinct statement by semicolons.

A beautiful form is better than a beautiful face; a beautiful behavior is better than a beautiful form; it gives a higher pleasure than statutes or pictures; it is the finest of the fine arts.

5. In imprints, between the name and location of the publisher.

Chicago: The Henry O. Shepard Company.

6. Between hours and minutes, when the time is expressed in figures.

10:40 a. m. 9:33 p. m.

In railroad time-tables the period is used in this connection, and many prefer the period at all times. This, however, is a matter of personal taste.

**The Semicolon**

The semicolon is used—

1. After each member of a series dependent upon an introductory or final clause.

The following officers were elected: Edward Gandy, president; George Haines, vice-president; Frederick Samuels, secretary, and Thomas Short, treasurer.

From Boston to Albany; Albany to Buffalo; Buffalo to Pittsburgh; Pittsburgh to New York; New York back to Boston—this was the extent of my trip.

2. Between successive members of a compound sentence, when the conjunction is omitted and the connection is not close.

Everything grows old; everything passes away; everything disappears.

3. Between the members of a compound sentence which are subdivided by commas, even though the members are joined by connectives.

Books are the food of youth, the delight of old age; the ornament of prosperity, the refuge and comfort of adversity; a delight at home, and no hindrance abroad; companions by night, in traveling, in the country.—Cicero.

4. Between the members of a compound sentence, when each member makes a distinct statement and depends on statements in other members.

Wisdom hath builded her house; she hath hewn out her seven pillars; she hath killed her beasts; she hath mingled her wine; she hath furnished her table.

**The Comma**

The comma is used—

1. After introductory expressions independently beginning a sentence.

Young man, young woman, what is your aim in life?

2. Before and after an expression placed independently within a sentence without destroying its meaning.

You must know, however, that this young man is seldom at home.

He had, on the contrary, returned to his office.

3. Before and after an explanatory expression within a sentence.

His departure, which was prearranged, was very hasty indeed.

4. After a phrase or clause which, if placed either at the end or in some other part of a sentence, would not change the meaning.

To be frank with you, this is not a true statement of the case.

5. After each one of a series of words or phrases which have the same connection with what follows and between which, excepting the last two, no conjunctions are used.

He was tall, thin, stoop-shouldered and pale.

6. After an informal introduction to a quotation.

As Caesar was going to the senate house, he saluted the seer, saying, "Well, the Ides of March are come." But the seer mildly replied, "Yes, they are come, but they are not yet over."

7. To separate contrasting words or phrases in the same clause.

Pope, in 1688.

Speak for, not against, the principles of love, peace and honor.

8. To indicate the omission of a noun, a verb, or a phrase, so that the meaning will be clear.

Milton was born in 1608; Dryden, in 1631.

9. After adjectives and adverbs, except the last, when three or more are used in succession.

He looked upon the world as a glad, bright, glorious abode.

10. Before the conjunction, when words or phrases are used for emphasis or contrasted antithetically.

He, and he alone, was willing to sacrifice his life.

11. After each of a series of words and phrases arranged in pairs and connected by conjunctions.

Ease and indulgence, luxury and sloth, are causes of misery.

12. Before and after participial and adjective phrases.

The village, quaint and rustic, nestled among the verdant hills.

13. To separate vocative words or expressions from the context.

Mr. Chairman, I am proud of this honor.

You may say, my friend, that I was delighted.

14. After each member of a series composed of several words not connected by conjunctions.

The men, the women, the children even, were up in arms.

15. Between two independent nouns and phrases connected by a conjunction.

The door was closed, and the people were patiently waiting.

16. After an informal salutation at the beginning of a letter.

My dear boy,

Dear old Bob,

The rules and examples given herewith are, we believe, sufficient to show the use of commas. It can be seen that they indicate slight interruptions in the grammatical construction of sentences.

Use commas sparingly, and when in doubt omit them.

### The Interrogation Point

The interrogation point is used—

1. After a direct question, to which an answer is expected or implied.

Is this a true statement of the case?

One is sometimes at a loss to decide whether to use the mark of interrogation or the exclamation point after a sentence interrogative in form but exclamatory in spirit. This is governed, however, by whether an answer is expected or implied.

How can I ever forgive him!

Do you realize what that means?

2. After a sentence declarative in form but intended as a question.

You will leave me alone?

3. Within parentheses to express doubt.

He was a very religious (?) man.

They were convicted in 1839 (?) for sedition and high treason.

After the statement of a question no interrogation point is used; as,

He inquired when it would be ready.

### The Exclamation Point

The exclamation point is used—

1. After a word, clause or sentence indicating surprise, pain, grief or emotion.

O God! that men should put an enemy into their mouths to steal away their brains!—Shakespeare.

Oh! How you frighten me! (A comma should be used after Oh except where especial emphasis on that word is indicated.)

God save the King!

2. After the last interjection, when several are repeated to express a certain sound.

Ho, ho, ho! You're the village joker.

3. More than once after words in order to add strength. These cases are rare.

Fire! Fire!! Fire!!! The sound seemed to be directly over our heads.

Never use the exclamation point after O. It has no particular meaning except to indicate a wish or an imprecation, or to add strength or feeling to that which it precedes: as,

O that I were a man! Away! Away! O ye unkind gods!

### Marks of Parenthesis

Marks of parenthesis are used—

1. To enclose words having no necessary connection with the rest of a sentence.

An amateur (literally, a lover) is one who pursues an art, a science, or a game, for the love of it, not for a livelihood.

2. To enclose an amount in figures, when it is preceded by the same amount expressed in words.

The amount was one thousand dollars (\$1,000).

The following examples show the use of other punctuation marks in connection with parenthesis. Note that the words enclosed within parenthesis are punctuated as independent sentences.

The proceedings, as stated by Blackstone (Chapter III of *Commentaries*), were all written . . . .

Where foresight and good morals exist (and do they not here?), the taxes do not stand in the way of an industrious man's comfort.

One was armed with a long dagger (about ten inches); the other carried a sword.

### Brackets

Brackets are used—

1. To enclose all extraneous matter written by some one other than the speaker or writer.

The gain of one thousand [rather high, we think] was effected in one month.

2. In reports of speeches, to enclose words explanatory of the emotions of the audience.

While woman may never be elected to Congress, she will continue to be the "speaker of the house." [Laughter.]

3. To enclose stage directions in printed dramas.

Shylock [Aside]. How like a fawning publican he looks!  
Lennox. May't please your highness, sit. [The ghost of Banquo enters, and sits in Macbeth's place.]

4. To enclose drop-folios (folios placed at the foot of each page of a book or booklet; as [64]).

### The Dash

The dash is used—

1. To indicate a sudden change in the thought, or the grammatical construction of a sentence.

If you go—and I know you will—you will never regret it.  
Now, resuming our talk—but I see you are disinterested.

2. To denote faltering speech.

I—ah—well, you can hardly expect it.

3. Before a concluding clause upon which a series of phrases or classes are dependent.

To be good and kind; to be honest and trustworthy—let this be our endeavor.

4. To indicate an abrupt termination of speech, or an unfinished speech.

I forgot—well, you know the rest.  
He didn't walk, he wad—. Well, anyhow, he was a very corpulent person.

5. Between words or expressions repeated for emphasis or explanation.

He talked of the ghosts—the ghosts of his ancestors.

6. After a side-head, to connect it with the words of a paragraph.

ART.—A complete account of the various principles of design.

7. Before the name of the author or work from which an extract is taken.

No more! Oh, how majestically mournful are those words.—Longfellow.

To indicate an omission of letters or words, when it is not desirable to give the words in full, a long dash is used.

He was presented to Mr.——, the diplomat.

His home was on H—— street, but we never could trace him to it.

### Quotation Marks

Quotation marks are used —

1. To enclose the exact words of an author, a speaker or a writer.

Goethe tells us that "Man makes mistakes so long as he strives."

2. Before each paragraph of quoted matter, but at the end of the last paragraph only.

The following paragraphs are taken from an essay by Goodwin:

"No subject is of more importance in the morality of private life than that of domestic or family life.

"Every man has his ill-humors, his fits of peevishness and exacerbation. Is it better that he should spend these upon his fellow beings, or suffer them to subside of themselves?"

3. Singly, to enclose a quotation within another quotation.

"Yes," he said: "I know it's true that 'chickens come home to roost.' "

Note how the foregoing sentence is finished.

4. To enclose names of books, articles, plays, pictures, subjects of sermons and addresses, etc.

A very good book is "The Three Musketeers."

The new play, "The Open Door," is a spectacular production.

"Liberty" was the subject of his address.

5. To enclose words or phrases intended by the writer to possess an unusual, technical or ironical meaning.

His "research" work was a case of misdirected energy.

Her literary "salon" will long be remembered.

### The Apostrophe

The apostrophe is used —

1. To denote the possessive case of common and proper nouns.

He stays at my brother's house.

Moses' hat did not fit him.

2. To indicate the omission of one or more letters in a contraction of two words used as one.

I'm going home. (I'm means I am.)

We're far from being satisfied. (We're means we are.)

3. To indicate the plural of figures and letters.

There were five hundred 5's and three hundred N's in this one column.

### The Hyphen

The hyphen is used —

1. To divide words into syllables so as to show the proper pronunciation.

in-dus-tri-ous (industrious).

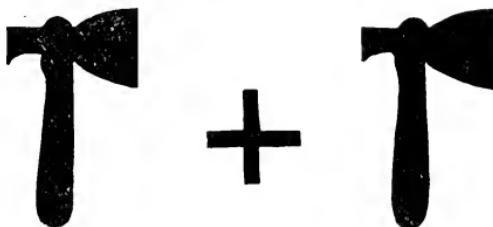
2. To indicate the division of a word at the end of a line.

(An examination of the ends of the lines in these columns will show examples of word divisions.)

3. In columns of index matter or tabulated work hyphens are sometimes used, thus:

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